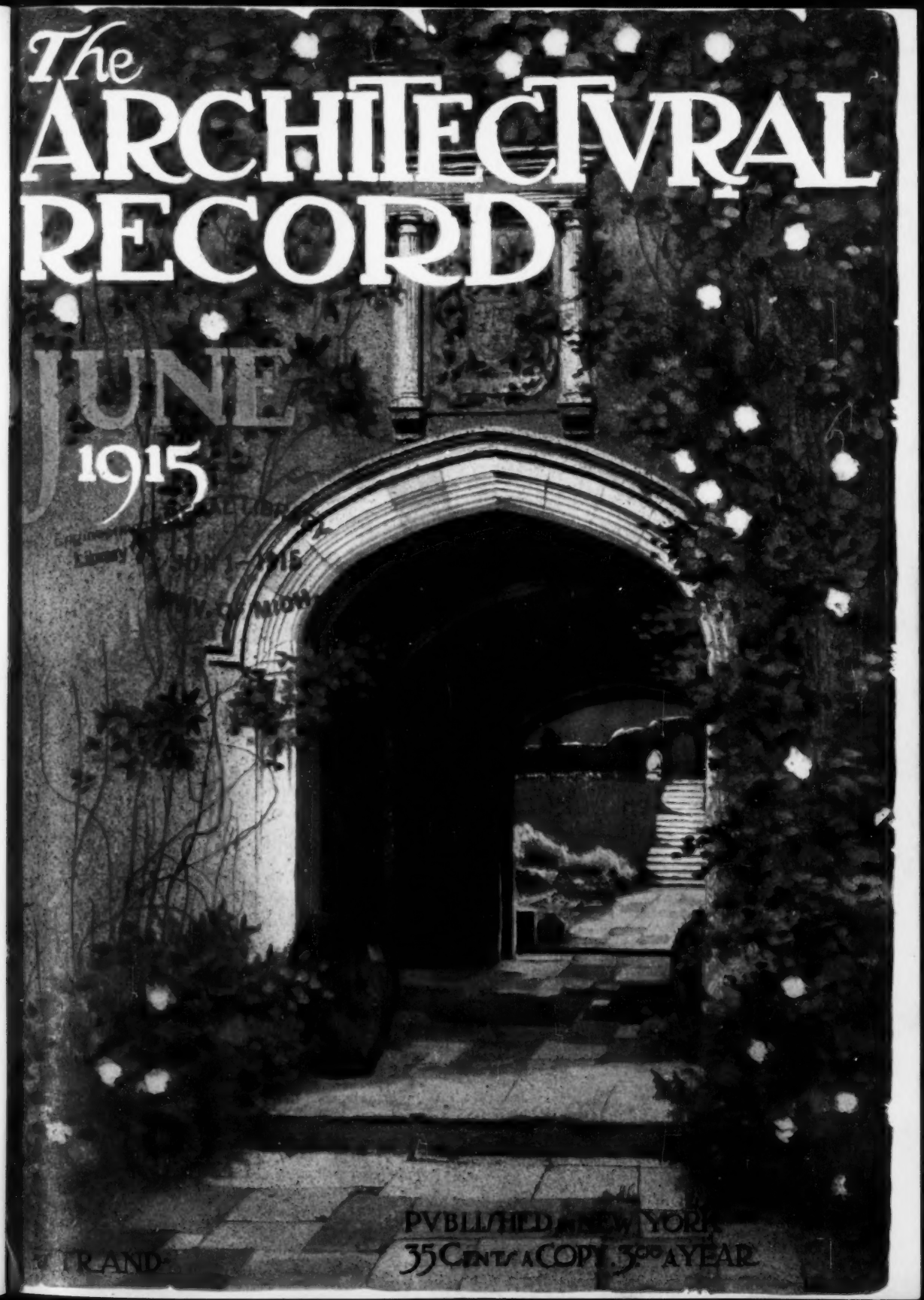
The ARCHITECTURAL RECORD



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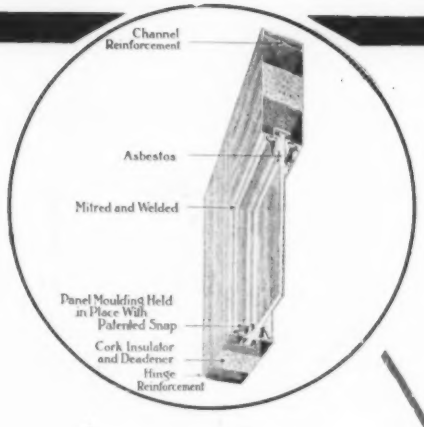

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THE ARCHITECTVRAL RECORD

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PORTICO AND CLOCK TOWER—ACADEMIC BUILDING, JOHNS HOPKINS UNIVERSITY, BALTIMORE. PARKER, THOMAS & RICE, ARCHITECTS.

THE ARCHITECTVRAL RECORD

JVNE, 1915

VOLVME XXXVII NVMBER VI

The NEW HOME OF JOHNS HOPKINS VNIVERSITY

By John Martin Hammond

THE development of the city in the neighborhood of the present buildings of the Johns Hopkins University and the growth of the undergraduate department rendered necessary, a decade and more ago, the creation of a new home for the institution; and the movement which resulted from a recognition of this need has taken definite shape in "Homewood," the new seat of the school. The beautiful tract of woodland which was selected as the site for the university has been surveyed and graded, and five of the units of the projected university group, including Gilman Hall, the principal building, have been completed, so that the architects and planners of the establishment are fully committed to their plans. The university expects to be in operation at Homewood in the fall of this year. It is safe to assert that in general beauty and charm the grounds and buildings of Homewood have rarely been equalled and the disposition of the buildings with regard to each other and their individual arrangement present features of novelty, ingenuity and practicality of construction of absorbing interest to architect and layman.

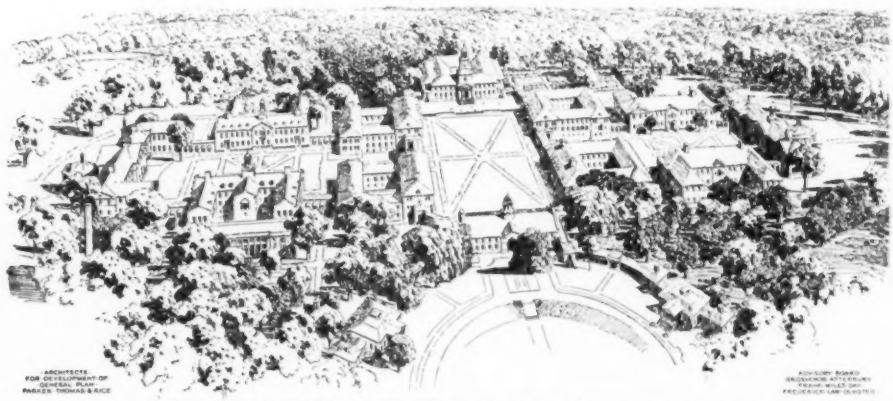
Anyone familiar with Baltimore, or who will look at a map of the city, will know that the present situation of Johns Hopkins University is in the business center of the city. The new site is about two miles due north of the old, within the city limits, and in the choicest part of a section toward which the tide of fine residence building of the city has of late years most consistently set. It consists of one hundred and fifty acres of land, fifteen of which is held back temporarily from the university as a life trust in an estate, and was presented to the university largely through the generosity of the late William Wyman, a public-spirited citizen of Baltimore. The tract which

he donated has been enlarged by various individuals, notably William Keyser, Samuel Keyser, Francis M. Jencks, William H. Buckler and Julian LeRoy White, —names long associated with Hopkins development.

It is a beautiful rolling stretch of land containing many fine forest trees and the entire western and southern boundary has been developed by the city, with an appreciation of the coming of the university, as a public park known as Wyman Park. The eastern and most important boundary of the tract is Charles street, Baltimore's most historic thoroughfare, and the northern boundary is the "Boulevard," the city's newest and most elegant suburban artery. Charles

pointed, consisting of Walter Cook, of New York; Frederic Law Olmsted, of Boston, and J. B. Noel Wyatt, of Baltimore, and under its guidance all of the initial work of the university was done. During the progress of the preliminary planning Messrs. Wyatt and Cook had become executive architects, so, in 1911, the advisory board was reorganized to consist of Messrs. Frank Miles Day, of Philadelphia; Grosvenor Atterbury, of New York, and Frederic Law Olmsted, of Boston, and this is its present composition.

To this board has been entrusted the important task of general supervision and of preserving harmony in the buildings through the course of the years.



GENERAL VIEW OF HOMEWOOD, THE NEW SEAT OF JOHNS HOPKINS UNIVERSITY, BALTIMORE.

street, also, has been widened and parked and on this street at the entrance to Homewood has been placed a "circle." Roughly, the whole tract is in the shape of an elongated hexagon of approximately equal angles, Charles street occupying the lengthened eastern side, the "Boulevard" the adjacent shorter side to the north, and Wyman Park all of the rest of the figure.

We find, then, that in 1902 the university fathers possessed this beautiful and ideally located tract of land. On it was standing Homewood, the old Carroll homestead, one of the most delightful of Maryland's survivals of the Georgian period of building. The work of development commenced. An advisory board of architects was ap-

Under the guidance of their advisers the university authorities in 1904 opened a competition to five well-known firms of architects, and the plan of development submitted by Messrs. Parker and Thomas, of Baltimore—now the firm of Parker, Thomas and Rice, of Baltimore and Boston—was approved as best and accepted. This plan had as its structural motif the design of Homewood, the old building from which the estate took its name; and it was felt that not only was Georgian architecture peculiarly appropriate to the site of the university, but lent itself extraordinarily well to the development of a university group of buildings.

The advantages of the Georgian for a university group, as conceived by the

VIEW FROM HOPKINS OVAL, JOHNS HOPKINS UNIVERSITY, HOMEWOOD, BALTIMORE.

university authorities and advisory architects, may be summed up briefly as follows: It is beautiful, it is dignified and restful; it lends itself well to combination with other buildings of the same character; it gives square rooms and no loss of floor space; it provides for ventilation and lighting; and, last of all, it is cheap and durable from the standpoint of construction.

The proportions and decoration of Homewood—the building—were carefully studied and preserved as far as possible in the plans of the new buildings, the proportion of window space to floor space only being changed so as to give ample light. The windows of the new buildings of Hopkins bear a constant relation to the floor space of one to six. So carefully have the interesting exterior features of Homewood—the building—been preserved that the main entrance of Gilman Hall, the principal building of the group, is an enlarged version drawn to scale of the portico and entrance to the old home. So much for the spirit of the new Johns Hopkins group.

The years of planning were not without work of constructive emphasis. A careful topographical survey of the grounds was made which was the base of a map of a scale of 40 feet to an inch, with one foot contours, in which the location of trees was closely indicated. The fine old woodlands of the estate were carefully studied by F. W. Besley, State Forester of Maryland, and many of the unhealthy, old and unsightly trees were removed to make way for a healthy young stand. With the accurate location of the sites of the various projected buildings of the school such landscape gardening as was conceived to be necessary was undertaken, with the idea in mind of endeavoring to develop the natural beauties of the grounds, and as far as possible to keep them in a state of nature. There has been little effort toward formal landscape gardening.

The requirements of the university in buildings were carefully set forth in the specifications which the university authorities adopted, after anxious consideration, and promulgated when asking for submission of plans, and it is instructive to know what these buildings were, and to consider how they were disposed with regard to each other in the architectural arrangement which at last won the approval of the authorities.

First of all, the requirements of the university in buildings were conceived to be as follows: 1, An academic building, Gilman Hall; 2, a chemical laboratory; 3,

INTERIOR OF MAIN COURT, LOOKING TOWARD ACADEMIC BUILDING, JOHNS HOPKINS UNIVERSITY, HOMEWOOD, BALTIMORE.

THE ACADEMIC BUILDING, JOHNS HOPKINS UNIVERSITY, HOMEWOOD, BALTIMORE. PARKER, THOMAS & RICE, ARCHITECTS.

THE ACADEMIC BUILDING, FROM SUBSIDIARY TRIANGLE TO THE SOUTH—JOHNS HOPKINS UNIVERSITY, HOMEWOOD, BALTIMORE. PARKER, THOMAS & RICE, ARCHITECTS.

a geological laboratory; 4, a biological laboratory; 5, a physical laboratory; 6, a heat, light and power plant; 7 and 8, dormitories and a dining hall; 9, a mechanical and electrical engineering building; 10, a civil and mining engineering building; 11, a gymnasium; 12, a student hall; 13, a classroom building; 14, a memorial building and chapel; 15, a president's house; 16, a faculty club; 17, an assembly hall; 18, an administration building; 19, an astronomical observatory.

Now, how were the conditions implied in this list met and developed into an acceptable plan? First of all, the entrance to the university grounds was fixed on Charles street, about midway up the eastern side of the grounds. Here stood Homewood, the tonal key of the new group, on a little eminence of ground about fifteen feet above the level of the street. At this point, then, was established a graded semi-circle, "The Bowl," as it has come to be known in Baltimore, with Homewood on the right of the rim. Opposite Homewood is to be built the president's residence, a structure similar in exterior detail to the former, which is to be used probably as the Faculty Club. Between the two is planned the Administration Building, with an arched gateway in the middle, giving access to the main quadrangle. Connecting the Administration Building and the two structures adjacent to it are colonnades set on the edge of The Bowl.

DETAIL—ACADEMIC BUILDING, JOHNS HOPKINS UNIVERSITY.

Standing at the entrance of the main quadrangle to-day one sees directly ahead over the level turf the springy, beautiful facade of Gilman Hall, in which are to be housed the library and the "humanitarian," or non-laboratory, apartments of the university. The quadrangle is flanked by four Laboratory Buildings; Physics and Geology, on the left; Chemistry and Biology, on the right. All of the buildings of this quadrangle are connected by tunnels and arcades, which are particularly effective architecturally and which allow passage from one to another without exposure to the weather.

Between the Laboratory Buildings on either side of the quadrangle are broad brick and marble colonial stairs, which lead to quadrangles of lower level than the first. Standing at the head of the steps, which lead to the southern, or left, of these subsidiary quadrangles, one finds one's self gazing upon the Engineering Buildings of the university. Upon the small quadrangle, to the north, are to be found undergraduate buildings, the vista being closed by a student hall.

To the rear of Gilman Hall, but not discernible from the main quadrangle, are situated the Botanical Laboratories and garden, the latter in a fine state of cultivation.

The heat, light and power plant of the group has been placed back of the Mechanical Engineering Building.

In the extreme northern corner of the grounds is the athletic field, and near it to the south is planned the gymnasium.

The dormitories are to lie between the athletic field and the main group of buildings, but distributed parallel to, and not far from, Charles street, which is their most convenient exit from the school. In the scheme of architecture the dormitories form a connecting link between the group of buildings planned for work and the recreation group—including the gymnasium and athletic field.

The axes of the university plan are parallel with and perpendicular to Charles street.

Passing from a consideration of the

general plan to individual developments thereof, it may be said that a visitor to Homewood at this time would find much accomplished, much under way, and much still in the void. The grading has practically all been done. The general progress of the whole development may be briefly summarized as follows: Homewood completed one hundred years ago; the Academic Building, Gilman Hall (library and seminaries) finished and to be occupied probably next term—the library to be moved to its new home probably during the summer months, Chemical Laboratory, site prepared and plans ready for bids; Geological Laboratory, site prepared and preliminary plans ready; Biological Laboratory, to be started; Physical Laboratory, site cleared and bids soon to be invited; Mechanical and Electrical Engineering Building, completed and in use since last October; Civil-Mining Engineering Building, ground broken for construction, expected to be completed during this year; heat, light and power plant, completed and in use; botanical laboratory and gardens, completed in 1908 and in use since then; athletic field and stands, completed and in use for several years. All of the rest of the program of the school has yet to be accomplished, but the ground work in all has been done.

A visit to Gilman Hall, the dominant member of the principal group, reveals many ingenuities of construction and novelties of design in addition to beauty and simplicity of exterior. Its aspect at the head of the quadrangle, which one faces when entering the grounds of the new university, has been aptly summed up by M. Llewellyn Raney, librarian of Johns Hopkins: "Here is the Carroll mansion's prophecy come to fulfilment. Homelike, simple, dignified, preserving the old portico multiplied by two, it is at once marked as the capitol of the campus by the clock-tower, which rises 120 feet from the ground level, inevitably carrying one's mind back to Independence Hall."

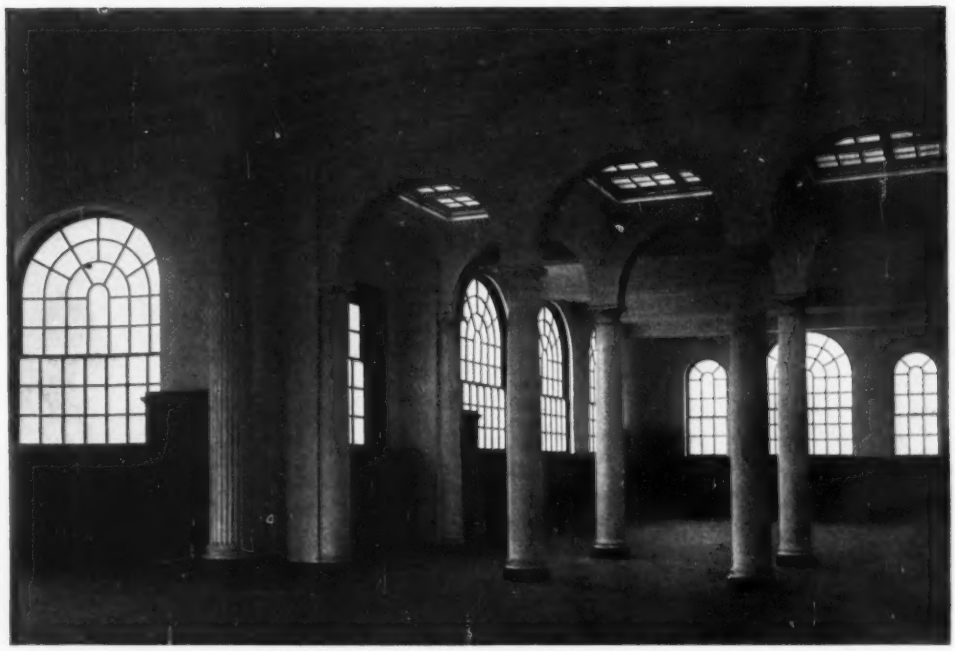
It is an ample and logical development of the theme of the whole university group.

In cubic feet Gilman Hall is three

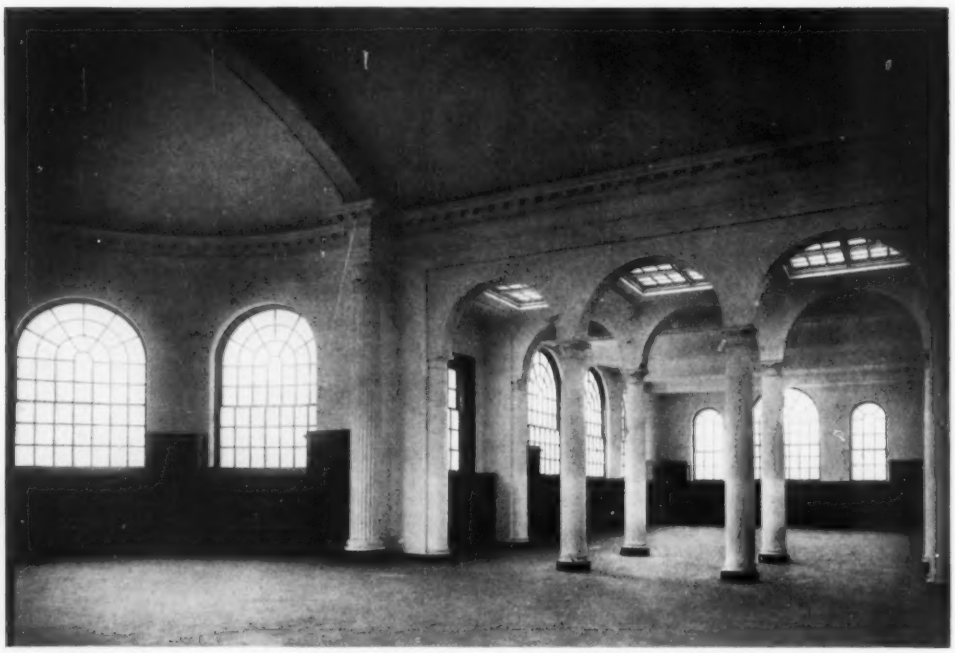
BOTANICAL LABORATORY FROM NORTH COLONNADE OF ACADEMIC BUILDING.

times the size of one of its laboratory neighbors and about one-half again as large as McCoy Hall, the member of the old university group whose place it is destined to fill. Its great bulk, however, is effectively concealed in front by having one story and a half buried and both corners recessed to a width and depth of 20 feet, except for one story stair-halls. Thus, though the falling ground to the rear gives the service of four floors, the front elevation appears

GLIMPSE THROUGH SOUTH COLONNADE OF ACADEMIC BUILDING.



DETAIL—MAIN READING ROOM, ACADEMIC BUILDING, JOHNS HOPKINS UNIVERSITY, HOMEWOOD, BALTIMORE.
Parker, Thomas & Rice, Architects.



NORTH WING OF MAIN READING ROOM, JOHNS HOPKINS UNIVERSITY, HOMEWOOD, BALTIMORE.
Parker, Thomas & Rice, Architects.

to be that of a two-and-a-half-story structure. It takes but a judicious planting of trees to give an apparent frontage of 164 feet (which is almost exactly the depth of the building) as against the wing-to-wing measurement of 204 feet.

The general arrangement is that of a hollow square with additions to every side—portico in front, shallow wings to north and south, and semi-circle at the rear. The lowering of the facade has had the further advantage of having made the main entrance to what is practically the second floor of the building, so that one need ascend or descend but one flight of stairs to reach the other two floors.

Entering the building from the front, the square vestibule leads directly to a chamber 28 feet by 59 feet, the decorative entrance room of the building—probably to be furnished as the Daniel C. Gilman Memorial Room. With windows overlooking the court, a fireplace on either side, this room offers excellent opportunity. Over the fireplace to the left is to be placed a large portrait plaque in low relief of President Gilman, Hopkins' first chief executive, for whom the building is named.

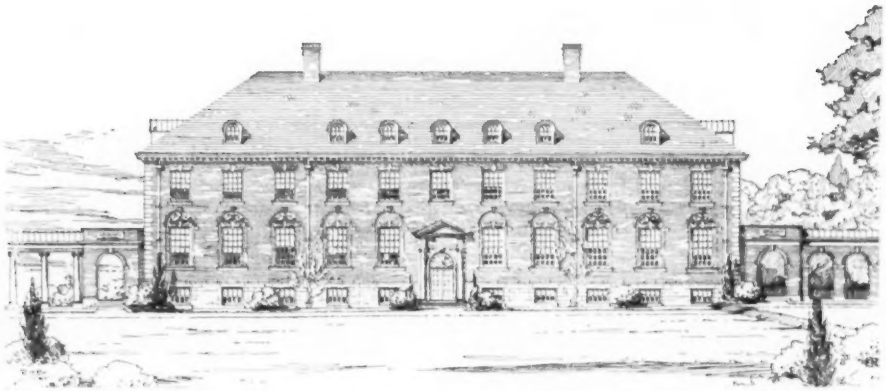
A generous corridor with niches for busts and sides free for display or decoration leads across the court to the reading room. Stretching the full width of the rear of the building, this room has a floor area of more than 6,000 square feet. Its odd proportion, great length and shallow depth, is saved from objection by the fact that it falls into three parts, the two end portions having another story above them, but the central portion, not thus affected, being covered with an arched roof. It expands westward into a semicircle overlooking the botanical garden. The windows are set high above the floor to facilitate the disposition of the shelves and the radiators are recessed. There is shelf space in the room for 15,000 volumes of ordinary proportion and 500 periodicals. In the center is the desk for the attendant and two doors directly under his observation lead to the stack rooms.

The stack rooms can be completely isolated from the rest of the building by means of fire-doors, easily swung to, thus giving this part of the building as nearly as possible the qualities of a fireproof vault. This does not mean that if Gilman Hall were to be completely consumed the books would not suffer, but it does mean that as far as human ingenuity can provide they would be protected. The stack rooms are built on their own foundations, from the ground up, thus insuring solidity to the frame-work of the shelves, which is of steel and of continuous piece from the foundations.

An unique feature of the Hopkins library has been its system of departmental libraries. These are cozy corners, cubby-holes in the library which can be secluded and in which books of one department are kept,—"segregated" as the students have it. This plan has been preserved and developed in the new library. An inspection of the floor plans of the building will show that the stack rooms are flanked by corridors, on the far side of which are class-rooms and professors' offices. Very well, then, on the library side of the corridor have been arranged the books which the corresponding classes use in their work. It is a very simple matter for the classes to pass across the corridor through departmental doors to the privacy of the room provided for them by their own stacks. All other entrances to the stack rooms are arranged so that they can be controlled from a single desk on the first floor. One librarian, therefore, can control all of the stacks in use.

Measurement disclosed the fact that there were five miles of shelving in McCoy Hall,—the old library home. In Homewood ten miles of shelving have been provided.

The distribution of space to the class-rooms has been equally generous. There are twice as many undergraduate class-rooms at Homewood as in the old quarters and these range in size from 240 to 1,200 square feet floor area. There is a 550 square foot seminar room for each graduate department,—and, in four cases, two of them. There is a 12 feet by 20 feet office for every officer and instructor.

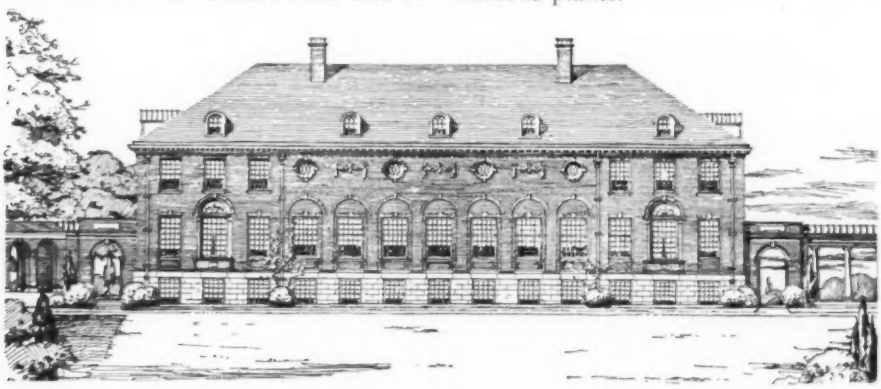


GEOLOGICAL LABORATORY, JOHNS HOPKINS UNIVERSITY, HOMEWOOD, BALTIMORE.
Walter Cook and Winthrop A. Welch, Architects.

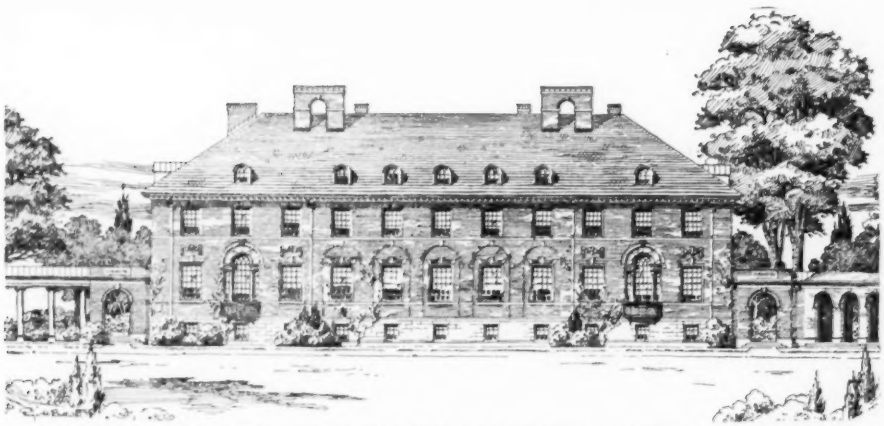
The floor of the main reading-room has been laid with cork, but the floors throughout the rest of this part of the building and of the book decks are formed of terrazzo, which is durable, reasonably quiet and exceedingly solid to the feet.

The most frequently used entrances to Gilman Hall are expected to be those at the northeast and southeast corners of the building, approached along the sides of the quadrangle. Teams, of course, will not be allowed in the quadrangle, so an entrance for them has been made from the rear and through a tunnel in the front of the building which will make possible the delivery of supplies at a point where they can be distributed quickly and with a minimum of effort to any department.

From the rear of Gilman Hall and to the north may be seen the botanical laboratory and garden, the former a long, low glass building of no unusual features but carrying out in its aspect the general theme of the university buildings. The garden is a square of ground one hundred yards on a side set unsymmetrically to the axes of the grounds. In its plan it differs from most botanical gardens in that it is quite formal, this arrangement being thoroughly in harmony with the Georgian spirit. The outline of the garden as a whole is marked by hedges of hemlock. It contains seventeen beds bordered with myrtle and separated one from another by well-kept cinder walks. The compact plan gives a large amount of bedding space in which there is accommodation for over 2,000 shrubs or clumps of herbaceous plants.



PHYSICAL LABORATORY, JOHNS HOPKINS UNIVERSITY, HOMEWOOD, BALTIMORE.
Wyatt & Nolting, Architects.



CHEMICAL LABORATORY, JOHNS HOPKINS UNIVERSITY, HOMEWOOD, BALTIMORE.
Carrere & Hastings, Architects.

Passing from Gilman Hall to the Mechanical and Electrical Engineering Building one finds the same careful planning that marks the former structure. The Engineering Building, it may be well to note, is one of two buildings to be built by State of Maryland appropriation and forming part of a new department (or, more exactly, a revived department) of the university.

The shop-room is a large and airy enclosure, running the whole width of the rear of the building, with steel skeleton windows and 200-ton travelling crane. Its walls are faced with semi-glazed brick which will not absorb grease and which will reflect light in all directions. The concrete floor is provided with channel irons to which pieces of apparatus can be fixed, thus doing away with the necessity for tearing up the concrete floor to provide a firm base every time a fixture is moved to a new location. This is all in accordance with modern shop practice.

In the heat, light and power plant, visited next, the perplexing heating and lighting problems which confronted the designers of the Homewood group have been attacked and the building contains many additional small features of design not ordinarily associated with structures of this character. As an instance of this latter feature, several different types of engine have been installed in the dynamo room, though all do the same work, in order that students in the engineering department may have opportunity to observe these different types of engine at work. The smoke stack has had built upon it at different levels two platforms with observation tubes through the stack so that students may be able to make smoke and other tests. All of the water used in the boilers may be passed over scales so that its quantity can be accurately determined, and it comes from the condensers to other scales so that it may be once more measured. It is hoped that much illuminating research work may be done in the power building while it serves its own humble purpose of keeping the other buildings warm and lighted.

One of the engineering features in connection with this part of the university that will attract attention is the concrete tunnel going from this plant to every part of the grounds and conveying the steam pipes and electric wires which will carry heat, power and light to the various buildings. This tunnel is of sufficient height for two men to comfortably walk through it abreast at any point; the wires, tubes, and pipes which it contains are always accessible and there will never be necessity for tearing up the grounds to reach some hidden leak or trouble.

At the far northern corner of the Homewood tract is the athletic field which contains a quarter mile track and a 220 yard straightaway, a lacrosse or football ground, base-ball diamond and tennis

MECHANICAL AND ELECTRICAL ENGINEERING BUILDING, JOHNS HOPKINS UNIVERSITY, HOMEWOOD, BALTIMORE.
J. E. Sperry, Architect.

courts, in addition to the customary dressing rooms. Two large concrete stands for spectators have been erected and a site has been arranged for a third if these should prove incapable of accommodating the crowds.

The dormitories have been planned on the individual unit system, with accommodations for 250 students in a unit.

In addition to having established the key for the university group and having made the general ground plan of development, Parker, Thomas and Rice designed Gilman Hall, the heat, light and power plant and are developing the plans for the Administration Building; the Chemical Laboratory was designed by Carrère and Hastings, of New York, an unique feature of this building being a system of open drains and individual hood exhausts over the separate chemical desks; the Physical Laboratory by Wyatt and Nolting, of Baltimore; the Geological Laboratory, by Walter Cook and Winthrop A. Welch, of New York; and the Engineering Buildings by J. E. Sperry, of Baltimore.

In the development of the Homewood group its architects seem to have found a peculiarly congenial theme and the animation and interest which they have shown therein is evident in their work as now physically set forth. The future development of this fine group will go on with more or less speed as the finances of the institution are plethoric or lean and empty. At all events, the right note has been clearly struck and Hopkins has laid out a work thoroughly consonant with her high ideal and inheritance.

ROMAN ARCHITECTVRE AND ITS CRITICS

By A. D. F. HAMLIN

PART II — The DEFENCE

IN a previous paper I have set forth the counts of the indictment which certain critics have brought in against Roman architecture. I propose in this paper to present the defense. I shall first of all demur to the indictment as being based not on sound reasoning from the facts, but on prejudice and mere traditions. Secondly, I shall endeavor to expose the contradictions in the testimony of the critics. I shall then, thirdly, answer to each of the five counts of the indictment, and shall close by presenting what I believe to be a fair and unprejudiced estimate of Roman architecture as a whole.

I.

Prejudice, in architectural criticism, is not the mere preference of one style over another. That is in itself both natural and legitimate. When, however, the preference is based on inadequate data, and takes on an intensity of hostility that blinds the critic to the real merits of the less-esteemed or disesteemed style, it degenerates into, as it springs from, unreasoning prejudice. It betrays itself in violence of language, in the refusal to concede merits which are conspicuous to the impartial observer, or at least in the rejection of the favorable conclusions which one might infer from the praise which they grudgingly bestow upon undeniable excellences. All these evidences of prejudice appear in the critics of both the ultra-Hellenic and the ultra-Gothic groups; violent language, in many of the passages I have quoted; blindness to obvious merit, as I shall later show; refusal to recognize the significance of their own grudging praise, as will appear in the contradictions between their own testimonies in the next section.

That this prejudice, this hostility to all Roman forms of artistic expression, this reluctance to concede to Roman architecture any of the higher qualities, spring largely from a mere tradition of criticism, any careful reader must, I think, conclude who studies the literature of the Greek and Gothic revivals in England. I have already pointed out that these movements were intellectual and sentimental rather than artistic movements. During the first half of the nineteenth century the habit became general of disparaging Roman architecture as compared with the Greek and the Gothic; but that the Greek revival was hardly the spontaneous expression of a deeply esthetic spirit let the British Museum and the "National Monument" at Edinburgh testify! That the early Gothic revivalists came no nearer to a true artistic inspiration is witnessed by the distressing inanities to which they gave being. Yet the Gothicists of that day disparaged the "pagan" architecture of Rome by comparison with their own petty ideals of the Gothic, even more contemptuously than did the Hellenists by comparison with their inadequate conceptions of Greek architecture. The truth is that in those days there were few or none who possessed any deep understanding of architecture itself, and it is very clear that few of them had grasped the real significance and inner spirit and content even of the styles which they praised. It is this Early Victorian tradition of depreciation of Roman art which the anti-Roman critics of our own day have inherited and perpetuated, ignoring all the wider and better knowledge we now possess of the Roman achievement, and refusing to yield to the testimony of the monuments themselves. Today there are broader views and a better understanding of what architecture really is than was the case fifty years ago. Books

FIG. 7. THE BRITISH MUSEUM, LONDON. FAÇADE TO RUSSELL SQUARE.

and photographs and travel have made us better acquainted with the works of all the styles. Is it not time that intelligent persons who write on architecture should open their minds to all this new light? Can we not discard the outworn apparatus of Early and Mid-Victorian criticism, and form our judgments upon the evidence that is spread before us?

II.

The critics whom I have quoted repeatedly contradict their own adverse judgments. The virility, majesty and daring originality of many Roman works, and the exquisite beauty of some of them, extort praise which is all the more sincere and certainly the more significant for being so reluctant. Fergusson, after declaring that the Roman "haste to enjoy" seems incompatible with the production of great architecture, confesses that "there is a greatness in the mass, a grandeur in the conception, and a certain expression of power in all these Roman remains, which never fail to strike the beholder with awe, and force admiration from him despite his better judgment." But why "despite his better judgment"? Why is it a worse judgment to yield to the natural and inevitable emotion kindled by these works? Before the huge mass of the Roman ruins unadorned in naked grandeur "criticism is disarmed," he says, "and the spectator stands awe-struck at its majesty."* Of the Coliseum he says, "It is worthy of all or nearly all the admiration of which it has been the object," and produces "an effect against which the critic struggles in vain."† Poor struggling critic—but why struggle? Why not drop the shackles of a narrow tradition and yield ungrudgingly to the enthusiasm which that mighty work inspires? Again, on page 296 of the same work we read of the Pantheon and Temple of Peace (by which the author means the Basilica of Constantine) that they "are to this hour unsurpassed for boldness of conception and justness of appreciation of the manner in which the new method ought to be applied."

*History of Architecture in All Countries, Vol. I, 294.

†Op. cit. I, 326.

Mr. Sturgis indulges less than some modern critics in hostile animadversions on Roman art; but he frequently alludes to "bad taste," "clumsy arrangement," "deliberate copying and imitation of Greek models" and the "sham architecture" of the Roman columnar arcade. Nevertheless he is compelled to admit, in specific cases, careful design and finish, conscientious execution, elegance and beauty of detail. The round temple at Tivoli "must have been the work of a designer possessed of great independence of spirit." The interior of the Pantheon has "an ineffable charm," "there is no interior in the world more impressive;" and its entire design and scale seem to justify that decorative use of the columns and entablatures which in other places the author decries or condemns. In his *History of Architecture* (Vol. I, p. 382) he admits that "men of truly artistic and truly refined sense of design" admire the Roman achievement of vastness, grandeur and splendor in the service of utility even when it lacks the delicacy and refinement of Greek design. The Roman stucco-decorations "are so marvelous that it is worthy of a special study to examine, date and classify them." Chapter VII of this volume is chiefly devoted to these works, which are praised for "the surpassing excellence of the modeling and the artistic conception," "for their effective simple decoration" and like qualities. He declares that the relief sculpture of the Romans, from Augustus to Trajan, "reached an approximate perfection reminding us of Greek work of a good period," and that "the very refinement of curve and the delicacy of relief which we fancy foreign to ancient Roman ideas of splendor are, after all, of imperial Roman origin" (p. 425). Mr. Statham, in spite of his severe strictures upon many features of Roman architecture and his assertions of its inferior taste and deficient originality, recognizes the exceeding beauty of the Corinthian order and the majesty and excellent planning of the great works of the Romans. And even Mr. Porter, for whom the adjectives vulgar, dreary, pretentious, blatant and cut-and-dried, and the nouns sham, coarseness, pomposity and blatancy hard-

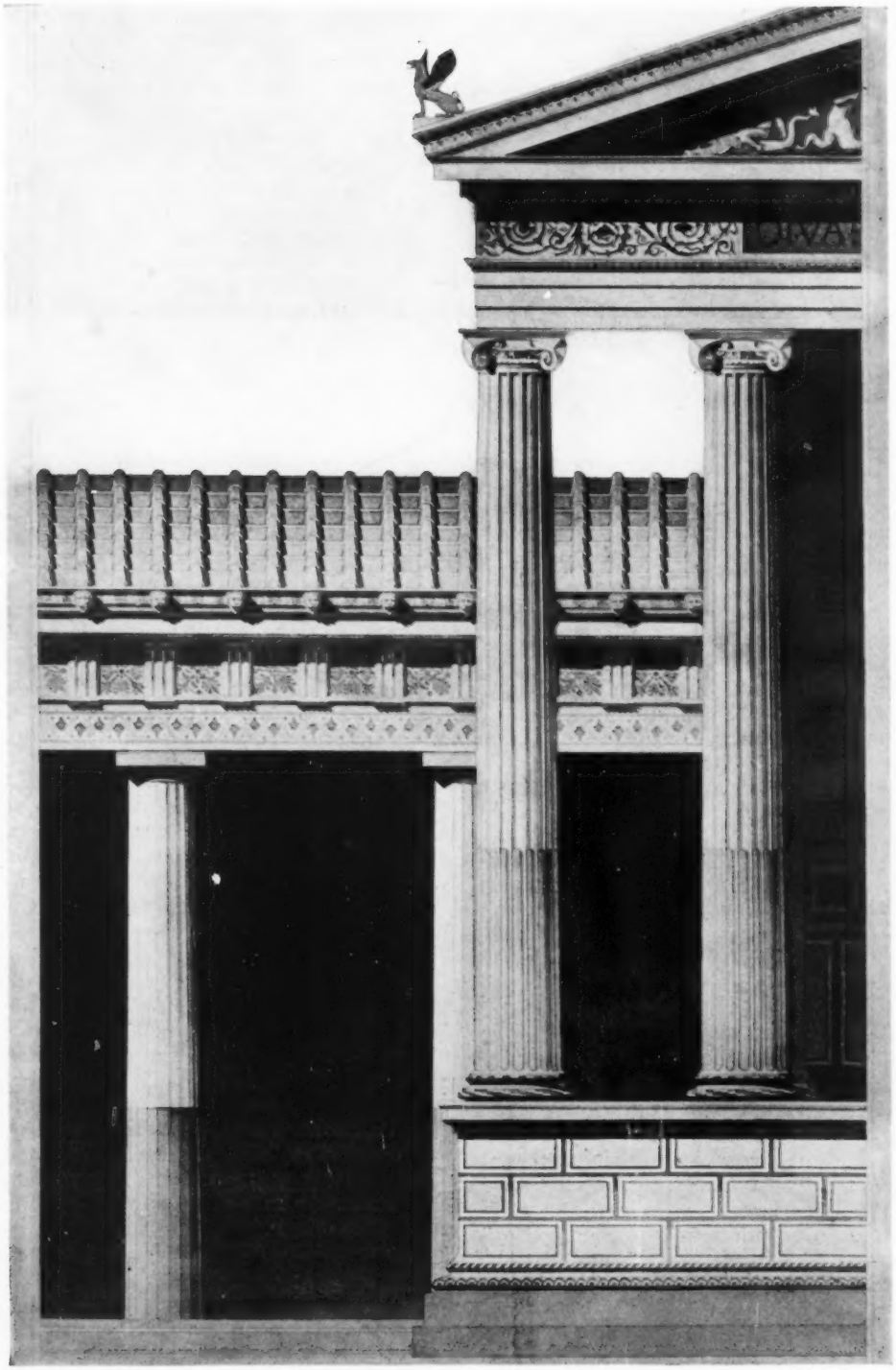


FIG. 9. TEMPLE OF VENUS, POMPEII. DETAIL OF ORDERS. FROM A FRENCH DRAWING.

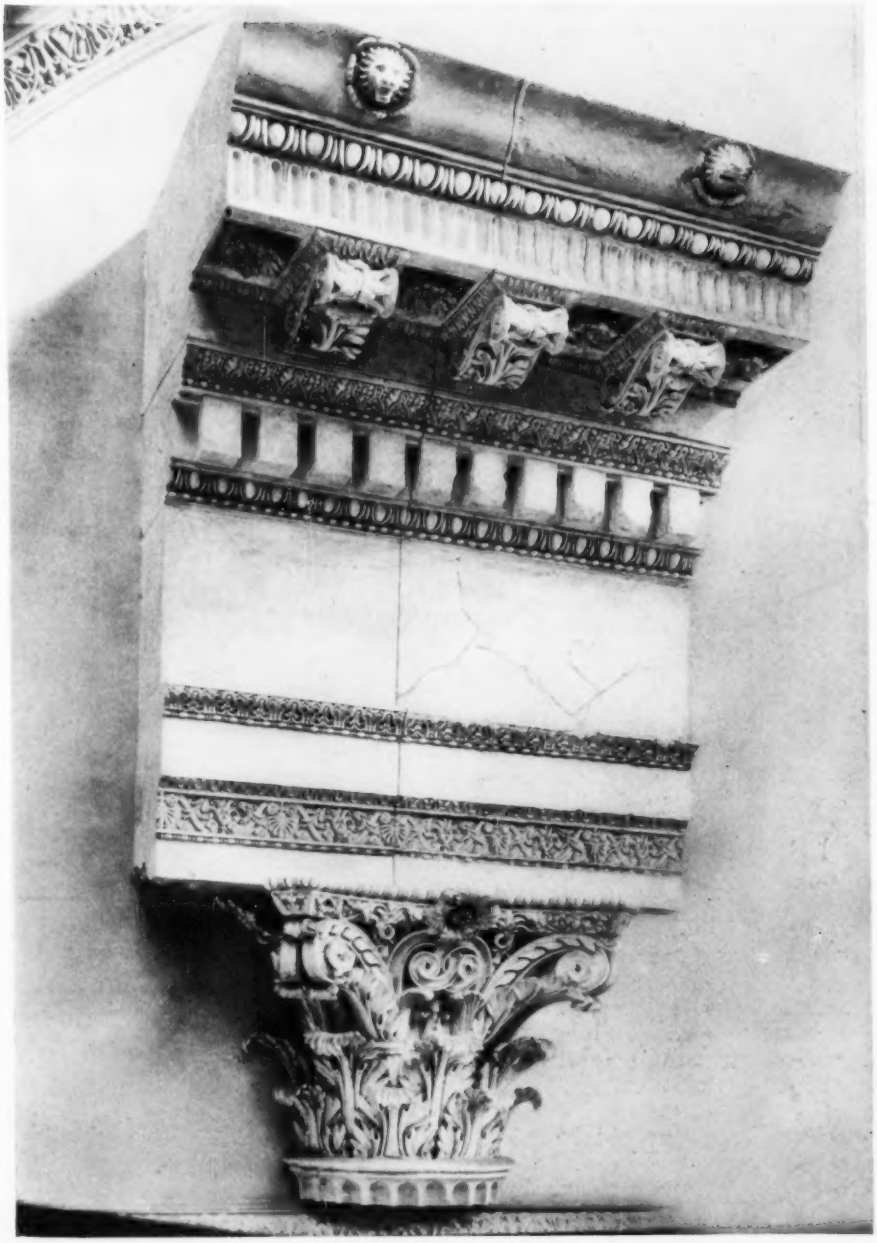


FIG. 8. CORINTHIAN ORDER OF TEMPLE OF CASTOR AND POLLUX. FROM CAST IN WILLARD COLLECTION, METROPOLITAN MUSEUM OF ART.

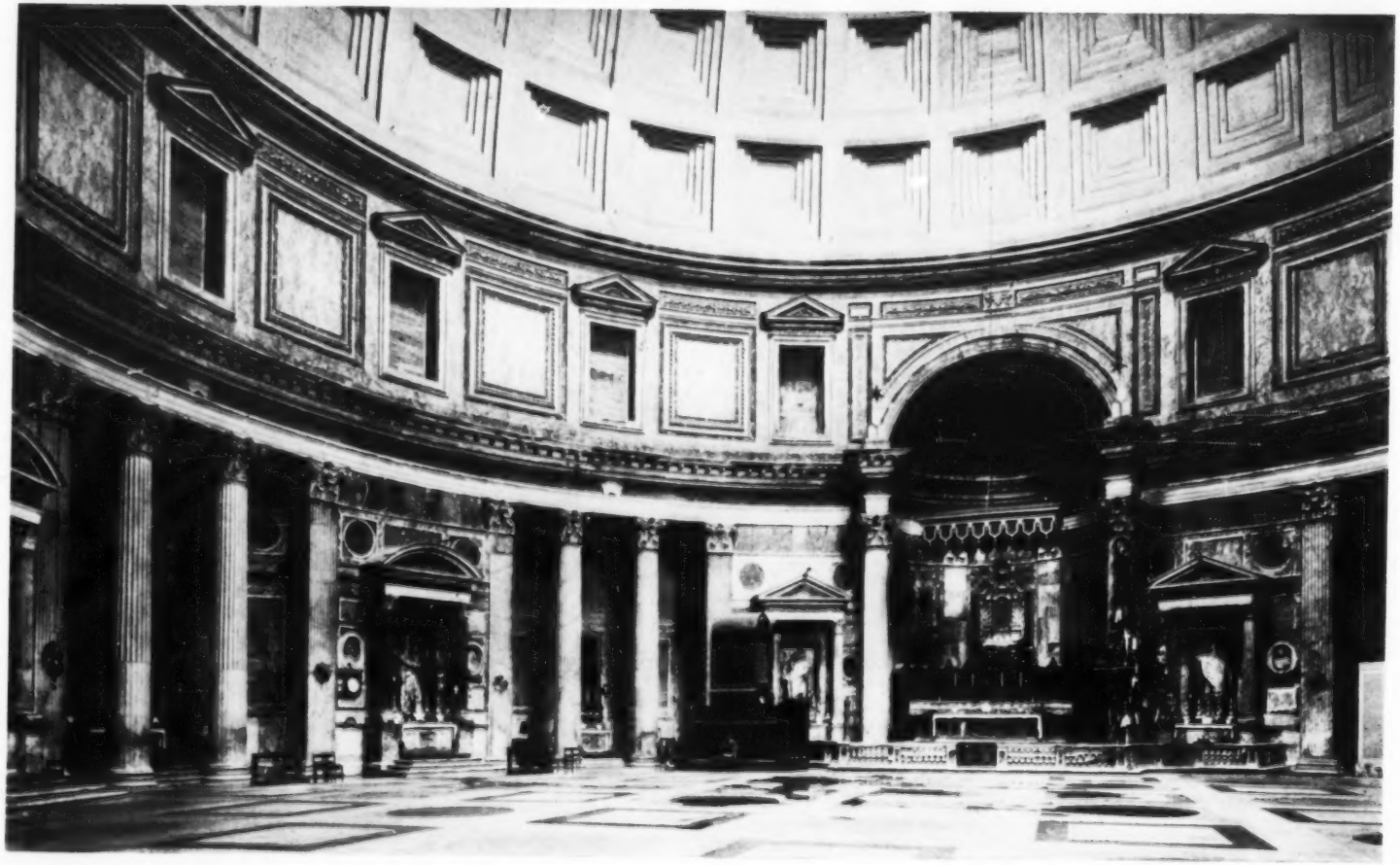


FIG. 10. INTERIOR OF THE PANTHEON, ROME.

ly suffice for his characterizations of Roman architecture, is constrained to acknowledge some good in it. To the imitation of Greek models, he says, "the Roman genius added certain new and original features of its own." "Architectural construction the practical Roman developed to a point far ahead of anything that had hitherto been reached." In another passage he declares that the Roman groined vault was the parent of medieval architecture, and that no other structural invention of any age can outreach it in importance. Reber considers that "in Roman architecture are found great intelligence in the solution of the constructive problem involved in the enclosing of large spaces, great independence in the development of technical perfection, and a masterly conformity to the purpose of the structure."

Thus not only the judicious critics and the mildly hostile, but even the most rabidly anti-Roman are compelled, reluctantly sometimes, "struggling" and "in spite of their better judgment" to admit in Roman architecture substantial merits, fundamental excellences of a very high order, in the light of which the violence and satirical hostility of their language in other passages appear quite uncalled for. When a critic on one page calls the Corinthian order the "most blatant" of all the orders, but on another implies that the Corinthian capital is the most beautiful of all capitals, what are we to think of his fair-mindedness or his consistency? Another, who insists repeatedly on the utter lack of originality of the Romans, can only say in support of this contention when brought face to face with the superb double temple of Venus and Rome: "All this, except the building in mortar-masonry and the idea of a vault"—rather important exceptions, one is tempted to remark—"might have occurred to a Greek. Perhaps it did occur to some of the engineers employed by the successors of Alexander." "Might have occurred," "perhaps did occur." What sort of critical reasoning is this? By similar reasoning applied to *Hamlet* any one may effectually dispose of all claim to originality in any of Shakespeare's works. I could multiply instances of similar contradictions and inconsistencies. It would seem to the simple-minded reader who has not been brought up, on a diet of traditional Early and Mid-Victorian criticism, to regard everything Greek as supremely perfect, and everything post-Hellenic and pre-Gothic as debased and vulgar—it would seem as though such important admissions by the witnesses for the prosecution tended to invalidate fundamentally a large part of their hostile contentions.

III.

Let us now take up seriatim the counts of their indictment.

The first of these* alleges the absence of the higher qualities of design—purity, refinement and good taste, and the prevalence in their stead of vulgarity, coarseness and pompous grandeur.

This charge is partly true and mostly false. It is one of those sweeping assertions which uncritical critics delight in making, and which have just that modicum of foundation in fact that makes them plausible to the unwary reader. Some of the special and particular refinements characteristic of Greek architecture at its best are not characteristic of the Roman work even at its best, at least in the same degree. The profiles of the Roman moldings are less subtle than the Greek, and optical refinements like those of the Parthenon are less frequent and less highly developed in Roman than in Greek work. But no one who makes a careful study of Roman architecture as a whole, or of its details, will allow this admission to be stretched to the denial of refinement and good taste in a large part of the really notable works of the Roman builders. Indeed, one may go so far as to assert that one of the evidences of their good taste is the very fact of their modification of the subtle curves of the Greek molding profiles to adapt them to the very different types of design in which they are used by the Romans. Most of the Roman moldings are enriched by carving, in which subtilities of profile become less important or disappear; the strong, full curves of the Roman profiles are far better suited to such enrichment, and to the particular combinations in which they occur, and to those effects of power and grandeur and scale which are

*See Architectural Record for last month.

FIG. 11. DETAIL OF ONE OF THE NICHES IN THE PANTHEON, ROME. SHOWING ALSO TOMB OF VICTOR EMANUEL.

the glory as they were the aim of the Roman designers, than the Greek profiles. For nearly two thousand years architects have been designing moldings, cornices, archivolts, bases, capitals and entablatures, without being able to improve in any great degree on the Roman combinations and sequences of moldings. The medieval moldings, which are neither Greek nor Roman, we may omit from present consideration because they belong to a fundamentally different style, and would be equally out of place on buildings of the Greek and of the Roman type.

Moreover, there are important categories of Roman design in which a very Hellenic sort of refinement is notably present. In much of the Pompeiian work, which is, like so many of the Greek buildings, modest in scale, there is observable a remarkable delicacy of design, a sensitive feeling for profile, for detail, for relief and for color, which impart to it a peculiar charm. All the buildings of the like class and date (with a few exceptions) in Rome itself have perished, and we can judge of their quality only by the "House of Livia," on the Palatine, some tombs on the Via Latina, and some stucco reliefs in the Museo delle Terme and the Baths of Titus. But as these show the same qualities as the Pompeiian examples in even higher degree, we may infer that in their buildings of more modest purpose and dimensions the Romans displayed everywhere many of those higher qualities of taste and refinement which they are so often declared to lack. I have already quoted Mr. Sturgis' enthusiastic characterizations of the Roman stuccoes, and admission of the Hellenic beauty of many of the Roman decorative reliefs. I believe an appeal to the monuments, could we only see them as they once stood, complete in their original environment, would convince every impartial reader that in even the grandest, the most pompous, ostentatious and majestic of them, the Temples of the Sun, of Venus and Rome, of Castor and Pollux, there is to be found an element of high refinement, and evidence of a true and pure taste, which the critics often have refused to concede. A "rendered" elevation of an entablature gives little real conception of its true qualities; and most of the literary and Hellenistic critics appear to have studied only drawings on paper and not the buildings themselves. That is to say, they have, through lack of trained imagination, been unable to reconstitute the building mentally from the drawings and, placing it in its proper environment, to judge it as one judges an extant building to-day. Let one study even the cast of the capital and entablature of the Temple of Castor and Pollux in the Metropolitan Museum at New York,* where that fragment is lifted to its proper height from the floor, and one discovers that this composition which, seen in drawings is called "overloaded" with ornament, is really enriched with a most delicately beautiful frosting of carved detail. Its "magnificent," "pompous," "blatant" capital and cornice, seen in their proper place, become exquisite in the perfection and refinement of their design. What must the whole temple have been! and what the Forum and the whole group of fora, with their temples, arches, basilicas and statues! The more one studies the Roman detail, the Roman handling of scale, the Roman conceptions of design, the more one is impressed with the absurdity of the idea that refinement and good taste cannot coexist with grandeur, splendor and even an overwhelming magnificence. The Pantheon, bereft of the finer adornments of the huge coffers of its mighty dome, remodeled, undoubtedly to its detriment in the eighteenth century in its upper portions, still offers the eternal refutation of that idea. One of the noblest of all interiors, almost overwhelming in its majesty, it is beautiful with a subtle charm of quiet refinement and faultless dignity which no artistically sensitive soul can deny. The Maison Carreé at Nimes—the only other monument of Roman architecture in Europe which remains to our day in tolerable preservation—is one of the loveliest bequests of classical antiquity, and is rightly the admiration and delight of artistic souls by reason of those very qualities of refinement which attract them in Greek art.

*See Fig. 8, on page 497.

FIG. 12. CORINTHIAN ORDER, TEMPLE OF THE SIBYL ("VESTA") AT TIVOLI. FROM A FRENCH DRAWING (A. THOMAS).

Moreover, Roman architecture displays in an eminent degree three distinguishing qualities of the highest aesthetic value, possible only to designers possessed of keen artistic sensibilities: the qualities of perfect scale, proportion and relief. Every architect learns in the trying school of experience how subtle and elusive a thing scale is, that adjustment of dimensions in every member and detail to the dimensions of the whole, which shall produce the desired total impression without sacrifice of any of the parts. The Roman designers knew how to make such colossal compositions as the Pantheon and the vast halls of the thermae or of the Basilica of Maxentius and the Ulpian Basilica count to the full value of their imposing dimensions, by the scale of all their subordinate parts. Inseparable from this skilful handling of scale, in the second place, and equally remarkable in successful achievement, is the Roman treatment of proportion, the spacing of columns, the proportioning of superposed orders, the form and pitch of pediments, the relation of height to width of arches, and the still more important determination of the relative height, width and length of each part of their vast interiors. They very seldom erred in these relations; a very little experimentation will show any one who tries it how hard it is to improve any important Roman building by altering its proportions. And, thirdly, in the matter of carved ornament, it was the Romans, not the Greeks, who discovered and taught the world the secret of "varied relief," by which the subordinate features of a decorative composition are made less prominent than its more important parts, and minor elements of the design almost melt into the background, so that the general movement of the design asserts itself to the spectator at a distance by its strongly massed lights and shades, while as he approaches nearer and nearer, the smaller details become successively visible. Beside the strong, sharp, hard relief of the Greek carving, as seen at its best in the Erechtheion, for example, the tenderness and delicacy of much of the Roman carved ornament are particularly noticeable. This is seen not only in the exquisitely modeled stucco reliefs of the houses and tombs, but as well in the carved friezes, pilasters and panels of buildings of monumental size.

Of all these refinements the critics we are discussing take no note. The architecture they contemn is an architecture on paper, an architecture of lithographs and line engravings, not the architecture of Roman actuality.

IV.

The second count in the indictment alleges against the Roman architecture a plagiarism which travesties the forms of Greek architecture and misapplies them, thereby demonstrating a total lack of originality. This is based, of course, solely on the Roman "orders:" not even the most hardened anti-Roman Hellenist ventures to assert that either the planning or the construction of Roman buildings was copied from the Greek. The Romans are said to have adopted the Greek orders and then to have spoiled them by inartistic alterations and illogical applications of them to new uses. Those who reason thus are curiously blind to the absurdity of claiming that forms fundamentally altered are mere copies, and of charging lack of originality in the same breath with the allegation of radical modifications and entirely novel applications of the original types. The student of Roman architecture has good grounds for retorting that in nothing are the independence and creative power of the Roman genius more conclusively displayed than in the use they made of their orders, which they converted into vital constituent elements of a wholly new, progressive and marvelously flexible architectural system. As a matter of fact the only order they borrowed from the Greeks was the Ionic, which they used but sparingly. The Tuscan was the national Etruscan order, in common use long before the Greek conquests had familiarized the Romans with Greek columnar architecture. The Roman Doric column was not derived from Greece. It is singular that the traditional assertion that it was should have so long persisted. The typical Roman "Doric" column *resembles the Greek in no single feature*, but is plainly an elaborated ver-

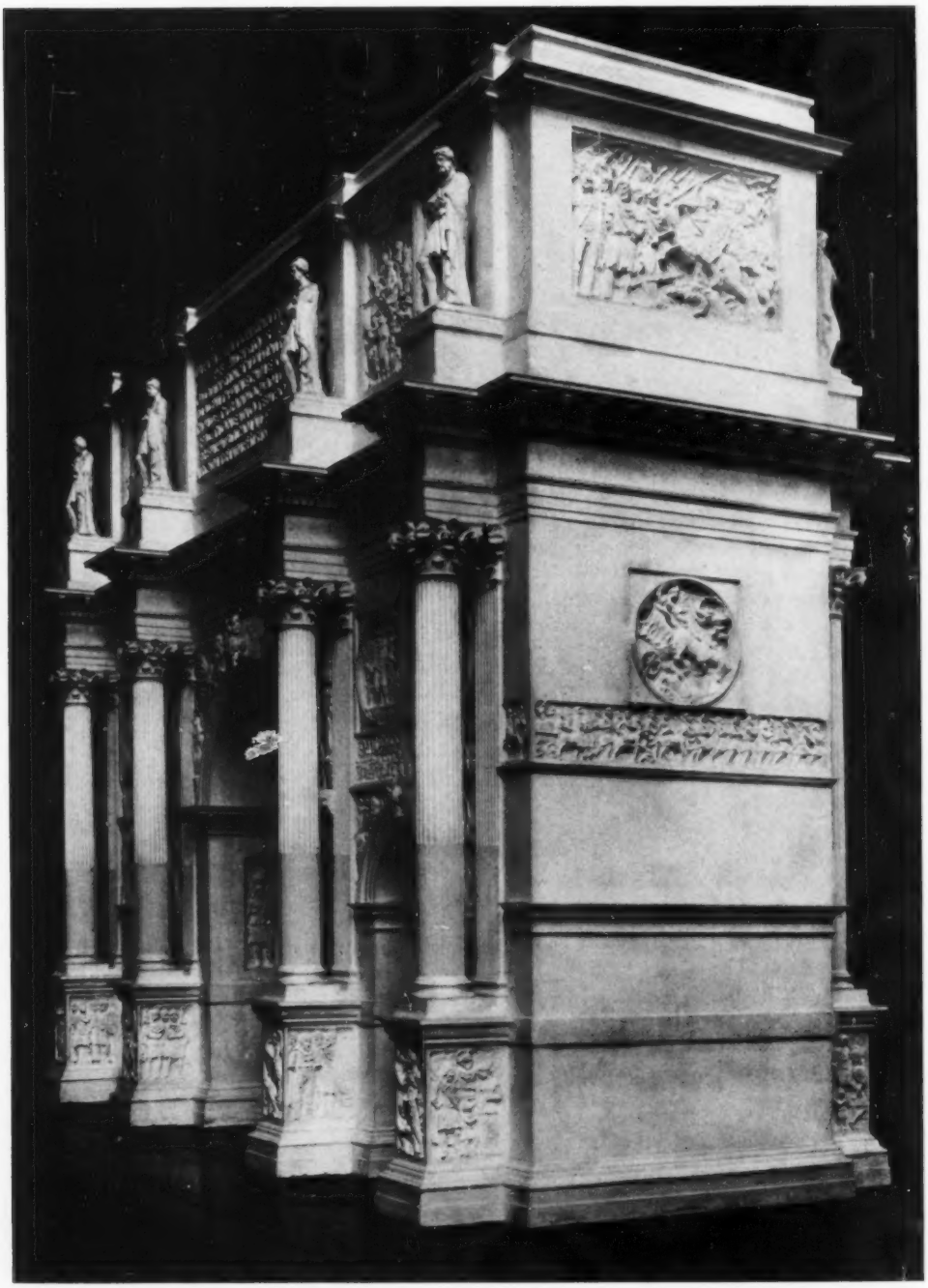


FIG. 13. THE ARCH OF CONSTANTINE, ROME. FROM MODEL IN WILLARD COLLECTION, METROPOLITAN MUSEUM OF ART.

sion of the national Tuscan column. The triglyphs and mutules of the Doric entablature may, however, have been derived from Greece; but the appearance of triglyphs on the cenotaph of L. Scipio Barbatus, who died about 290 B. C., suggests the probability that they had been long known to the Etruscans, who derived not a few elements of their architecture from ancient traditions common to them and to the Greeks. The Corinthian order was almost wholly a Roman creation, based on a Greek original, it is true. But the Greek Corinthian was not a distinct order; it was a mere variant of the Ionic, from which it differed only in its high, bell-shaped and foliated capital. The base and the entablature which the Greeks used with it were purely Ionic. The capital had not been perfected into a permanent type by the Greeks; it was the Romans who gave it its final form, recognized by even captious critics as the most beautiful type of capital ever devised. The Romans designed for this column a new and distinctive base, and completed the order by the invention of the modillion cornice, for which Greek architecture offered no precedent whatever. The modillion comes as near being an outright invention as any architectural detail in the history of the art. It is one of the most brilliant innovations in history,* and the Corinthian cornice in the beauty and splendor of its effect, is the noblest possible crown for a building of classical design. In two thousand years it would seem that no one has ever designed anything finer for its purpose.

In their applications of the orders the Romans made striking innovations upon the Greek practice, by which they vastly increased the flexibility of the orders themselves, and the range of architectural design generally. By the superposition of the orders they made possible impressive compositions in several stories. Greek architecture is almost exclusively an architecture of one story. By the use of monolithic shafts of polished granite and marble they produced superb effects of chromatic decoration in noble materials without the use of perishable paint. By the introduction of pedestals they were enabled to keep the parts of an order to a given scale with an increased total height. They coupled columns with pilasters in their triumphal arches and forum walls, making the pilaster serve as a wall-respond, and thereby gained superb effects of light and shade otherwise unattainable. By these means, all of them original with the Romans, they produced an entirely new architecture different from the Greek in fundamental character, not merely in detail. To call this architecture a "copying" of Greek originals is as absurd as to call it a "travesty" of Greek forms. The architecture is neither copied nor a travesty. Even the porticoes, in which the columns are used for the same purpose as in Greek architecture, are as widely different from Greek porticoes as two columnar designs can ever be.

V.

But the Hellenists and Gothicists who are not broadminded enough to admit the posibiiity that two styles of architecture which proceed by divergent paths toward diverse ideals are equally entitled to respect and admiration, now advance the third count of their indictment. "We will admit," they say, "that the Romans invented new applications of the column and entablature, but these applications are illogical and artistically improper. Engaged columns and entablatures applied to walls are a solecism, they are thereby diverted from their true structural function and made into mere ornaments; and of all these misapplications the least defensible is the marriage of the column and entablature with the arch. The combination of such heterogeneous forms, belonging to two distinct systems of construction, is wholly indefensible."

This sounds plausible; it has been so constantly repeated, so dogmatically insisted on, that the most intelligent layman is persuaded it must be true. Few have been the modern writers bold enough to try to breast the tide of hostility to this invention of the Roman designers, but protesting voices have begun to make themselves heard, at

*A. K. Porter says of this epoch-making invention: "It occurred to some genius to clap both dentils and modillions on the same entablature." Yes, and so it occurred to a Genoese genius to sail West till he reached America.

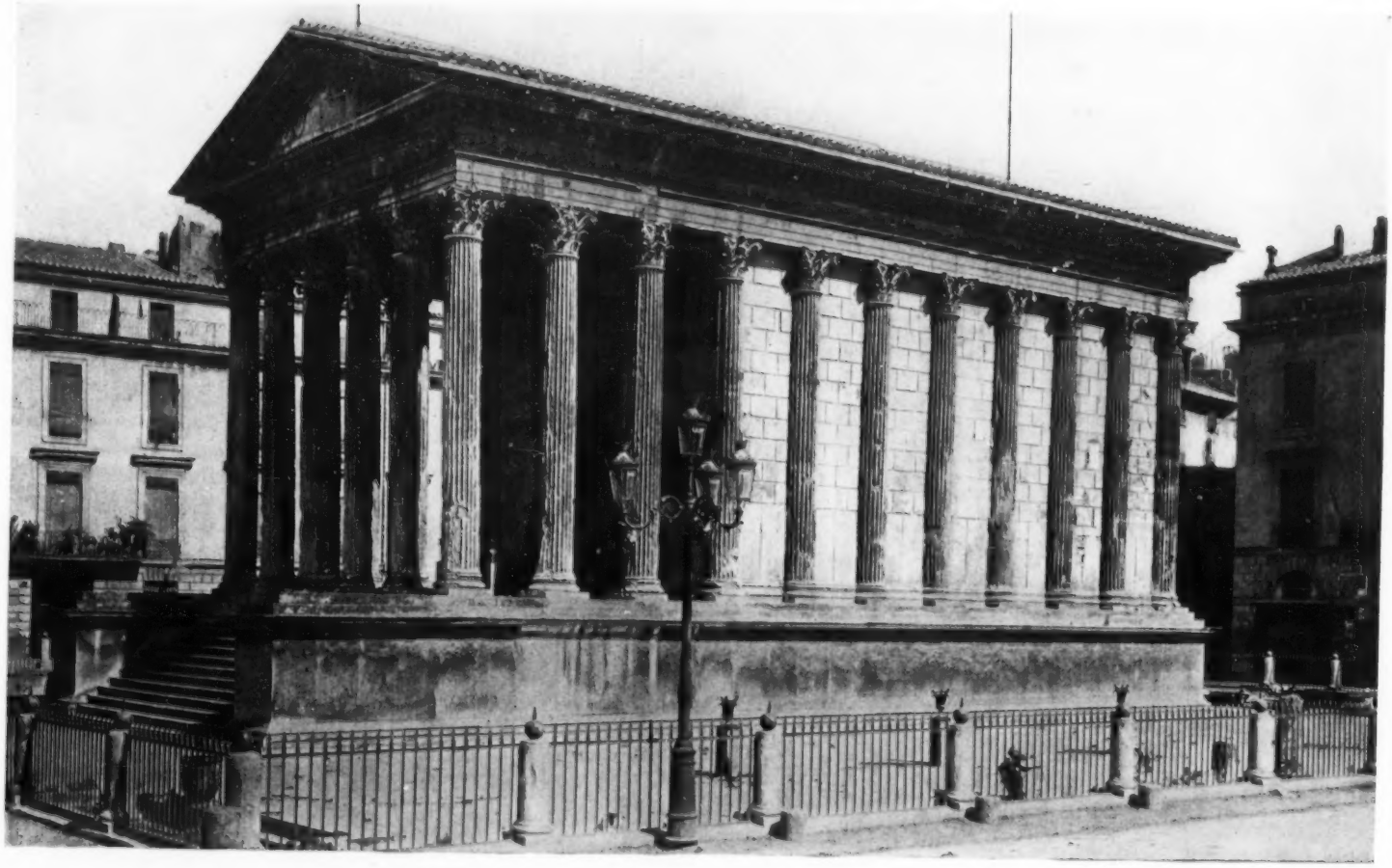


FIG. 14. THE "MAISON CARREE," AT NIMES, FRANCE.

least in England. Professor F. M. Simpson in his *History of Architectural Development* (vol. I, p. 111), and Sir T. G. Jackson in his recent work, *Byzantine and Romanesque Architecture* (vol. I, p. 10, 11), have each a good word for the Roman combination of arch and column; but what are they, *rari nantes in gurgite vasto*, among so many of the contrary opinion? The predominance of disapproval of this combination, among those who *write about* architecture, is all the more remarkable when one considers the equally strong predominance of approval among those who *make* architecture. In spite of the critics they persist in using it, as they have persisted in doing for at least six hundred years. The critics meet this fact only by a sweeping accusation of persistently corrupt taste. The practitioner laughs at the critic for a prig, insists on using the arcaded order because it is useful, convenient and beautiful, and asks what the critic would put in its place.

The common objection to this combination is that it is illogical because it applies structural members to a purely decorative use; a "sham," because the columns pretend to support an entablature which is really carried by the arcaded wall behind them; and "false" for both of the above reasons. But the decorative use of forms originally structural is a universal law of architectural progress. The triglyphs and the stone ceiling-panels of Greek architecture, the useless flaring capitals of the Egyptian hypostyle halls, the open-work gables and the wall-traceries of the developed Gothic style, are examples of the operation of this law in three different historic styles universally recognized as "truthful" and "sincere." Indeed, there is little excuse for the lateral colonnades of the Greek temples except their splendid decorative value; the Roman temple-builders got along without them in many cases, and in others frankly applied them as engaged orders against the flanks of the temple. In combination with arches in the theatres, amphitheatres and basilicas, the engaged orders, so far from embodying falsehood, serve to emphasize as no other device could, the fundamental facts of the interior divisions of the buildings into bays and stories, expressing vividly to the eye the lines of chief stress and support in their construction, and visibly reënforcing the piers which resist the thrusts of the internal vaulting. The columns perform precisely the same function—a purely esthetic one—as the vaulting shafts of Gothic cathedrals; they satisfy the eye by providing a visible support for what they appear to carry, and what without such apparent support would seem insecure, although actually carried in perfect safety by the masonry behind the column or shaft. Professor Moore, in his *Development of Gothic Architecture* and again in his recent *Medieval Church Architecture in England*, insists upon the structural logic of the vaulting shafts; but an analysis of the actual stress conditions of Gothic vaulted churches makes it clear that a corbel would suffice in their place; the shafts are purely supposititious necessities structurally, and might be removed with no danger to the edifice—which is precisely the objection which the Gothicists allege against the Roman arcade columns! Architecture on paper and in beautifully printed letterpress with persuasive illustrations sometimes follows paths that diverge widely from the architecture of real building and lead to surprising results.

VI.

The fourth allegation of the indictment, that which charges the Romans with starting architecture on a fatal path of false principles of design, which has been disastrous in its effect on modern architecture, I have in part answered in the preceding section; that part, namely, which relates to the decorative use of the orders and the combination of columns with arches. But there are critics who impugn the entire Roman system of structural design and decoration as false. The Greeks, they tell us, and the mediæval church builders, erected honest constructions of solid masonry, plainly revealed as such inside and outside alike. But the Romans always, and for mere appearance, built of coarse rubble or a species of concrete, and veneered this

FIG. 15. THE ROMAN AMPHITHEATRE, NIMES, FRANCE.

coarse and hasty construction with a veneer of stucco and marble, falsifying the cheap coarseness of the mass by a pretentious apparel of fine material. This has been the parent of the whole dismal succession of modern shams and pretense, to the corruption of modern taste and the destruction of honest design.

This, like all the other charges, has a plausible ring of superior artistic morality, until we examine the facts and implications behind it. The fundamental allegations are only half true. The majority of the Greek temples, for instance, outside of Attica where marble was abundant, were built of coarse stone which was covered and concealed by a coating of painted stucco. Both the vaults and the interior wall surfaces of many of the great medieval churches were plastered and painted. On the other hand, in those regions where fine building stone abounded, but where lime and pozzolana were scarce, as in Southern France and Syria, the Romans used pure cut-stone masonry as frankly as either the Greek or the Gothic builders did. The implications of this criticism, moreover, reflect seriously upon the Creator's honesty. For in the noblest of His works, the human form, a veneer of precious material—the exquisite color and texture of the skin—so covers the unpleasant materials and details of the interior construction of the body as to conceal them wholly from view. The beauty of this masterpiece of design is only skin-deep.

But the real answer to this criticism goes beyond these considerations. The charge of dishonesty is predicated upon the fundamentally erroneous assumptions that there is only one kind of good architecture possible; that architecture has only one system and principle of design legitimately at its disposal, and that hence if the Greek (or the Gothic) architecture is right in principle, all others proceeding on other principles must be wrong, and that a fundamental principle of good architecture must be the outward visible display of the interior structure and materials. But this is a narrow and pedantic assumption. Architecture is the servant of man, not his tyrant. The critic has no right to call upon the designer to abdicate common sense, to ignore the conditions and environment in which he works, to reject every species of beauty, every form of expression, which may be unattainable by the particular methods of Greek or Gothic design. The purpose of the architect must be to build beautifully, to meet the practical needs of his time by such means as he possesses with structures which shall be as beautiful, or as splendid, or as majestic as he can make them. This the Romans did with extraordinary success, with daring ingenuity, with marvelous boldness and originality. The vast and massive vaulted structures they erected could not have been built, except in the rarest instances, of cut stone, and the Roman use of the abundant local materials piled up by the labor of soldiers and slaves, of brick, stone and rubble-concrete, each where each best served its purpose, was the only rational and only possible procedure. It is perfectly legitimate for the critics to declare, to their hearts' content, their preference for the Greek or the Gothic type of design, but it is not valid criticism to deny the right of another to prefer the Roman, or at least to admire the Roman achievement. Each of these types and systems, growing up out of its own particular environment and conditions, was the best for its own purposes, time and place. One has a right to find fault with the Roman designs, details, composition or decoration, but each must be judged on its merits, with relation to the purpose, environment and conditions of the problem. And when the critic wants to generalize on a question like the aesthetic propriety of applied decoration, veneers of stucco and marble, non-structural use of structural features, he will do well not to throw too many stones at the Romans lest they reply to the injury of his own glass house; for he may find himself obliged to condemn all plastering, wainscoting, mosaic, tiling, decorative painting and sculpture, triglyphs, paneled ceilings, vaulting shafts, traceried gables and a dozen other important features of Greek, Byzantine and Gothic architecture, logically liable to the same condemnation.

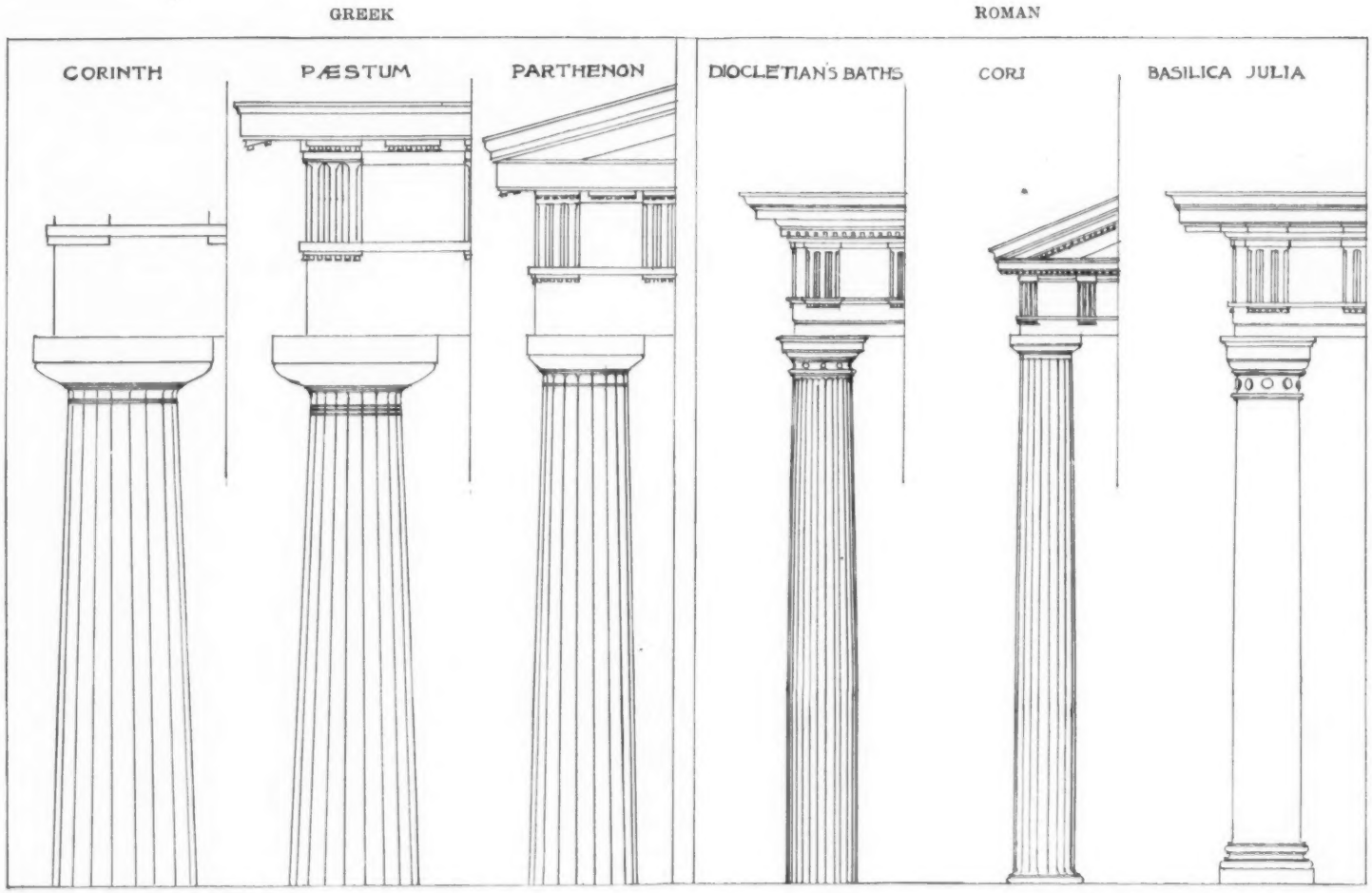


FIG. 16. COMPARATIVE VARIATION OF GREEK AND ROMAN DORIC COLUMNS.

VII.

The fifth charge is an indictment of Roman architecture and ornament on the score of its uninspired and mechanical uniformity, its subjection to stereotyped rules of design. Architectural composition became "little more than a planting of the orders on all sorts of buildings;" the capitals and mouldings are machine-made, and the whole product, throughout the whole empire from first to last, "shows a lack of variation absolutely without parallel." Obviously such an architecture is destitute of all originality.

The answer to this charge is simply a flat denial of every one of its contentions, and an appeal to the monuments themselves. It is a charge that might with some force be alleged against Greek architecture, but to assert it of Roman architecture argues the author of the charge to be either densely ignorant or curiously blind to the obvious facts. The evidence of the monuments makes the charge absurd. Many readers have perhaps been misled by the loud talk of two generations of critics who have drawn on their imaginations for the facts, and sought to make up by an abundant sprinkling of strong adjectives for their lack of discriminating study of the monuments. It will probably surprise such readers to be told that the Roman orders are infinitely *more varied than the Greek;* that Roman ornament disposed of a far greater number and variety of motives than any that ever preceded it, and treated these motives with a flexibility and a varied adaptation to position, decorative function and material which even the medieval artists hardly surpassed. If one compares the Greek temples from first to last with each other, the Doric order is seen to have been varied in hardly a single detail for six hundred years. The Ionic shows a greater variety; but in Roman architecture, in spite of its official and governmental character, a fairly detailed study of a long list of examples even in Rome itself fails to disclose *any two examples of any order, from different buildings, which are alike.* Compare, for instance, the Doric orders of the Theatre of Marcellus, the Colosseum, the Basilica Julia, the Tabularium and the Baths of Diocletian—no two of these examples are alike in proportions, base, shaft, capital or entablature. The Corinthian capitals and entablatures of the Pantheon, Temple of Castor, Portico of Octavia, Colosseum and Temple of Venus and Rome differ widely from one another, showing in each instance the exercise of individual design and in many cases exquisite refinements of detail whose existence no one would suspect from reading the writings of the critics. A cursory examination of Professor Frothingham's fine work on the Roman arches of triumph will reveal an extraordinary variety of treatment of similar programs. While the Imperial domination asserted itself throughout the vast extent of the empire by a certain unity of spirit which makes its architectural products impressively Roman, whether in Germany or Southern France, Algiers, Syria, Greece or Italy, there is little more unity of style than in the Romanesque churches of Western Europe, dominated as they were by the unity of discipline and of program of the great monastic orders. Where the program was absolutely identical, as in the amphitheatres and some of the temples, there is a close resemblance, comparable with that, for instance, between the abbey churches of Waltham in England and Cérisy-la-forêt in France, and the Maison Carrée at Nimes is thoroughly Roman-Augustan.

But the architecture of Baalbec is widely different from that of Rome, and both of these from that of North Africa. The three great city gates of Autun, Treves, and Rome (Porta Maggiore), the Gate of Hadrian at Athens and the superb triple gateway at Palmyra, are five fundamentally different designs, unlike in plan, composition, construction and detail. In Roman plans the variety is endless: the temples show an extraordinary array of differing forms and arrangements, and hardly two even of the temple porticoes are alike; the same is true of the baths, basilicas, palace groups, villas and houses. And when one considers the small number and scant variety of the fundamental types and programs of the Greek and even of the Gothic architecture, the variety of the

Roman types and programs and the ingenuity, inventiveness and resource manifested by their designers appear little less than extraordinary.

VIII. THE SUMMING UP.

To those who have studied the Roman contributions to the art of architecture with open minds and a sympathetic readiness to appreciate what is valuable in them—and that is the only kind of study that is worth while—the Roman achievement appears worthy of the highest admiration. Its excellences are not chiefly those which one especially commends in Greek architecture, nor is it to be judged by the same criteria which one applies to Gothic buildings. Its purposes, programs, resources, problems and conditions were alike different from those of the fifth century B. C. and those of the twelfth and thirteenth centuries A. D., and it met them with a genius which in its own way and field was no whit inferior to that which produced the architecture of either of those other periods. The Greeks in five centuries produced a limited number of masterpieces of a very limited number of types, one of which they developed to supreme perfection on the Athenian Acropolis. The temple, the stoa, and the city gate or propylæa, constitute almost the whole program of Greek architecture. It is almost exclusively a columnar architecture applied to buildings of one story and of elementary plan. The column, wall and lintel were the only structural elements the Greeks used or developed. In this limited field they worked with an almost unerring taste, and their work within those limits has never been surpassed. They exhausted the possibilities of their programs, but lacked the inventiveness necessary to produce new programs or devise new constructions. They were confined to endless minute variations of one theme. In contrast to this paucity of invention, Roman architecture produced an astonishing number of programs—temples, fora, palaces, amphitheatres, baths, basilicas, gates, colonnades, arches of triumph, tombs, administrative buildings—and an extraordinary variety of constructions employing marble, cement, cut-stone masonry, brick, tufa, granite, bronze, wood and plaster, the arch, barrel vault, groined vault, dome, and truss, each according to the special program, purpose, materials at hand and environment of each building. The Romans invented the pedestal, pilaster, archivolt, and modillion, the arcaded order, the niche. They were the first who ever conceived and executed a vast and lofty interior, unencumbered by columns. This surely was a gift to the world of inestimable value. The architect of the Pantheon produced a stupendous interior of extraordinary beauty for which there existed at the time no prototype or previous approximation, and which remains unsurpassed to this day, the most marvelous product of original genius in construction and design in the whole history of art, with the one possible exception of Hagia Sophia at Constantinople, built four centuries later. In planning the Romans gave the world a new art. In their thermae and in such architectural aggregations as the palaces on the Palatine Hill, the forum of Trajan, and the temple group at Baalbec, they created a new art of monumental planning, and taught the world how, by a proper coördination of large and small parts, high and low roofs, open spaces and covered halls, a cumulative effect of artistic power and beauty, an ordered rhythm and balance, could be produced with apparently heterogeneous elements. They originated a new art of civic planning. They produced new effects of grandiose scale and magnificent symmetry.

The defects of Roman architecture are chiefly the defects of its qualities. In such vast enterprises as it was engaged in, the minute perfections, the delicate refinements and the figure sculpture of the Parthenon were not achieved, for they were not possible. Among all the vast array of buildings erected at different times over the immense extent of the empire, there were, of course, not a few which merit severe criticism. The facility of applied decoration by a factitious apparel of architectural members, lent itself to occasional abuse. But the more one studies the monuments, the more one is impressed by the resourcefulness

FIG. 17. TEMPLE OF JUPITER, BAALBEC, SYRIA. NORTH WALL.

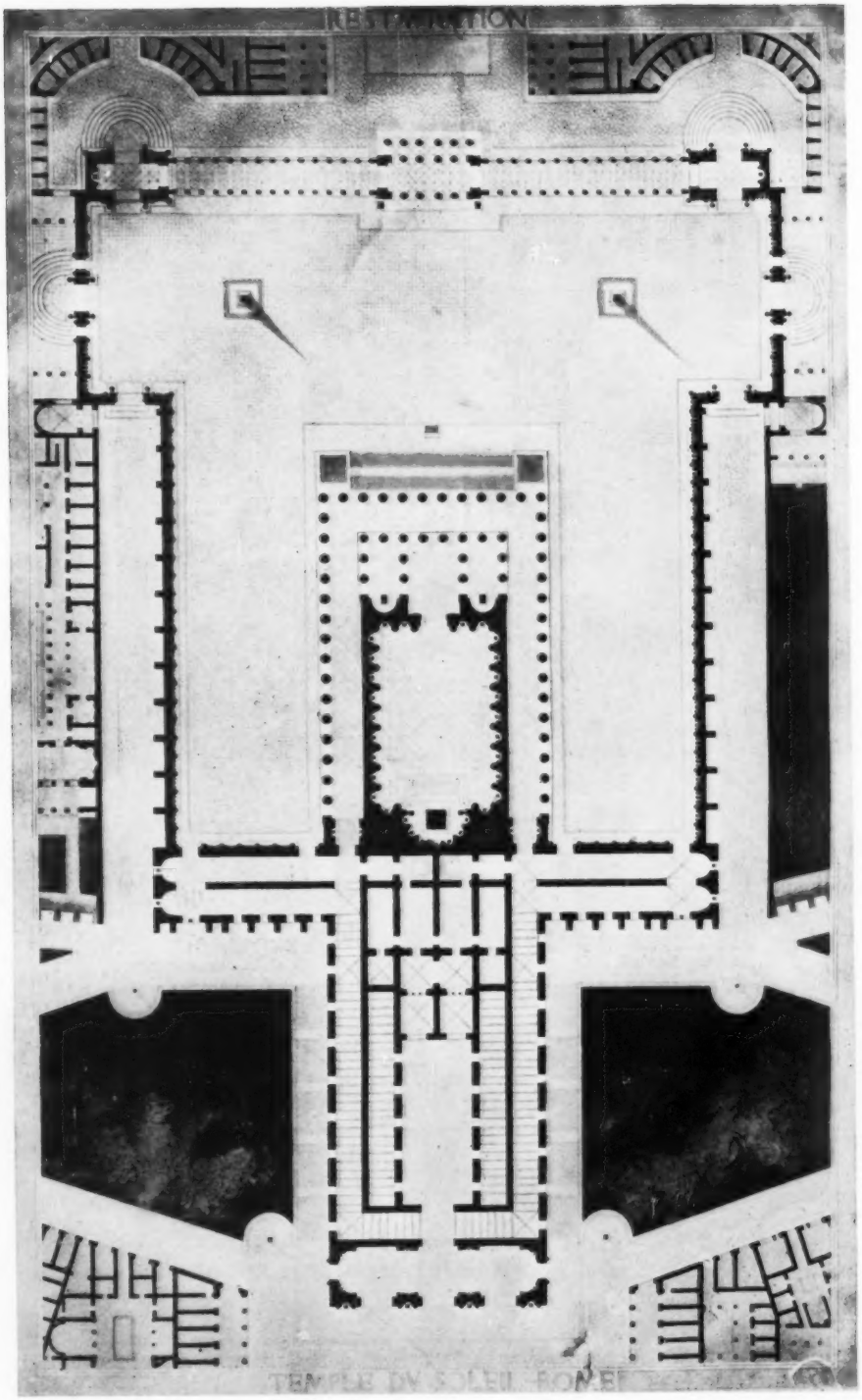
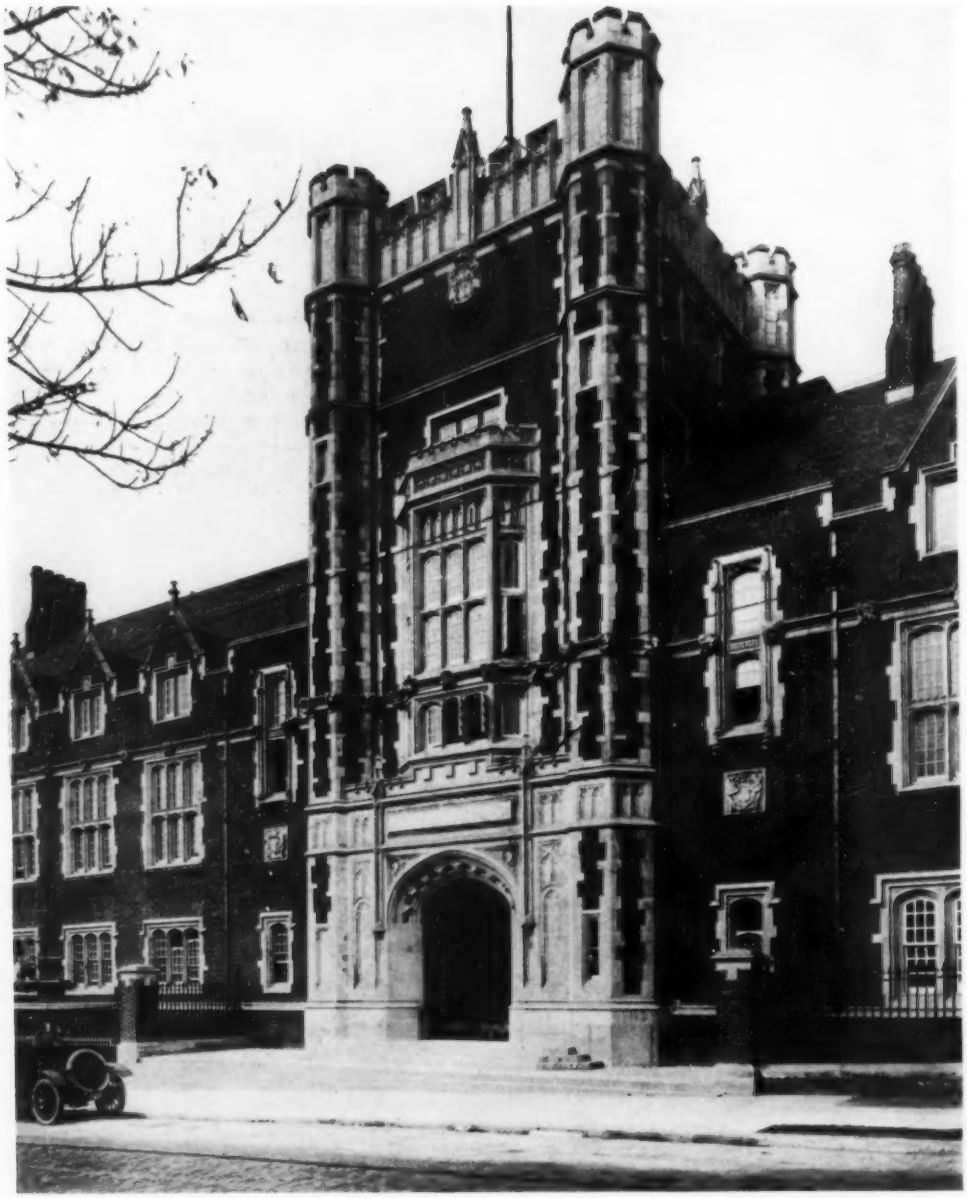


FIG. 18. PLAN OF TEMPLE OF THE SUN, ROME. FROM A FRENCH DRAWING.

and general good taste which mark their design. The forms, devices, structural arrangements and details of this architecture were extraordinarily flexible and adaptable to varying conditions, programs and purposes. It is not without good reason that these forms and devices are studied and imitated today. It was not because the artists of the fifteenth and sixteenth centuries lacked original creative power, and therefore fell to copying, that the Renaissance revived Roman forms and devices—a most preposterous accusation, to which both Ruskin and Fergusson have given an ill-merited currency. It was because the Renaissance introduced a new era in civilization, with new requirements which Gothic art could no longer meet, that the men of that time turned instinctively to Roman models for inspiration. The Roman civilization was in many of its aspects nearer to modern life than any other. Greek architecture, even had the fifteenth century been acquainted with it, was too narrow, rigid and limited to meet the new demands of the modern life. To this day the use of Greek forms is restricted to the narrowest possible range of applications, and even in these has to be varied in many details. The Roman forms are flexible, and capable of endless variation and application even to the most modern uses, and constitute an alphabet of architectural details and conceptions which the world may not outgrow or find useless for years or even centuries to come.

FIG. 19. FRAGMENT, FROM THE LATERAN MUSEUM. ROMAN SYMBOLIC AND CONVENTIONAL ORNAMENT.



TOWER AND MAIN ENTRANCE—EVANS MUSEUM AND DENTAL INSTITUTE, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA. JOHN T. WINDRIM, ARCHITECT.

THE SOUTH FRONT—EVANS MUSEUM AND DENTAL INSTITUTE, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA.
John T. Windrim, Architect.

TWO DENTAL BUILDINGS IN PHILADELPHIA AND BOSTON

By HAROLD D. EBERLEIN

IN Philadelphia and Boston two important buildings for dental purposes have recently been completed, buildings that are significant from both the architectural and thoroughly practical points of view. They are the Thomas W. Evans Museum and Dental Institute of the School of Dentistry, University of Pennsylvania, in Philadelphia, designed by John T. Windrim, and the Forsyth Dental Infirmary for Children, in Boston, designed by Edward T. P. Graham.

The English Collegiate Gothic inspiration for the Evans Museum and Dental Institute may be ascribed to the desire to preserve a measure of harmony with the dormitories and some of the other newer buildings of the University of Pennsylvania, buildings in whose closely allied aspect Tudor and early Stuart characteristics are dominant.

But discussion of the architectural aspect must be reserved for subsequent paragraphs. The Evans Museum and Institute is, before all else, an eminently practical building. Its practical side has been stressed from first to last and it is fitting, therefore, that attention should first be given in that direction. It is desirable, however, before going further, to say something of Dr. Evans and the bequest by which the building for the Museum and Institute was erected. The synopsis of Dr. Evans' personal history will explain several things, among others the presence of his personal effects, including a great number of paintings and a profusion of *objets d'art* in the museum and likewise the location of the building at some distance from the rest of the University property.

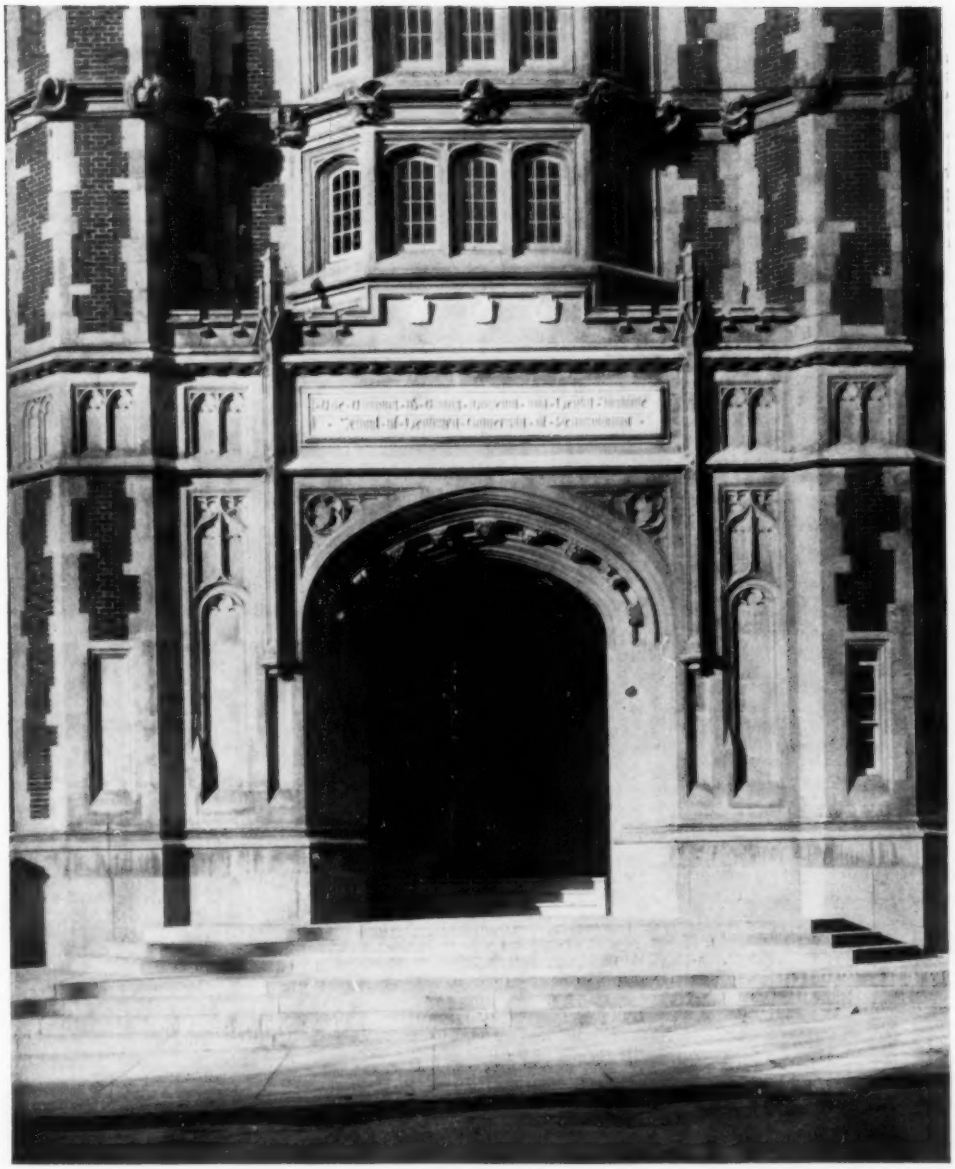
Thomas W. Evans was born in Philadelphia in 1823 and, as a lad lived in a

house that stood, until recently when it was razed, on Spruce street west of Fortieth on a part of the ground now occupied by the Museum and Institute. His fondness for his boyhood home in West Philadelphia, or Hamilton Village, as that portion of it was then called, led him to designate its site as the place for the dental school whose foundation was a long cherished purpose. At the age of fourteen he "entered the employ of Joseph Warner, a gold and silver smith of Philadelphia, whose business included the manufacture of certain surgical instruments, and incidentally of plate, solders, and some of the implements used by dentists." From his occasional necessary contact with dentists he seems to have derived the impetus that led him to engage in dentistry as a profession. "In 1841 he became a student in the office of the late John DeHaven White, of Philadelphia, with whom he remained for two years." While studying under Dr. White, he also pursued a course at the Jefferson Medical College, from which institution, in due time, he graduated.

After practicing in Maryland and, later, in Lancaster, Pennsylvania, where he accomplished some remarkable work, for which, in recognition of its novelty and excellence, the Franklin Institute, in 1847, awarded him a gold medal, he was brought to the notice of Dr. C. Starr Brewster, an American dentist then practicing in Paris, who invited him to enter into partnership with him. This partnership lasted until 1850, when Dr. Evans opened an office independently in the Rue de la Paix and entered upon a career "as wonderful as it was unique." A rare combination of personal characteristics along with special technical skill soon made him a conspicuous figure. "Dentistry became to him the stepping-stone which served as a means of bringing him into contact with those to whom he made himself of value and who contributed substantially to his success. He was a born diplomat, possessing a keen perceptive faculty which enabled him to read and correctly understand human nature, delicacy and firmness in his treatment of affairs, a rigid honesty of purpose, and a foresight which was intuitive. In short, he knew how to make the best of his opportunities, and in some degree create them."

In time he came to number among his clientele virtually all of the crowned heads of Europe whom, "by his skill and attractive personality," he attached to him and, at the same time, won their confidence, a confidence well-placed, as we may judge from the success with which he conducted a delicate diplomatic mission to President Lincoln, entrusted to him by Napoleon III, as a result of which France remained neutral during our Civil War. How trusted he was by his royal clients may also be seen from the important part he was called upon to play after the disaster of Sedan, in assisting the Empress Eugenie to escape, an episode graphically described by Madam de Hegermann. His confidential relationship to the Emperor of the French enabled him to accumulate the greater part of his wealth through judicious real estate investments while his connection with other royalties and persons of note kept him in occasional correspondence with them and their friendship and regard are attested by the numerous presents of all sorts they sent, many of which are in the collection in the Museum. After a life largely devoted "to works of charity and philanthropy," as well as to the discharge of professional duties, Dr. Evans died in Paris in November, 1897.

Such, in brief, is the story of a remarkable man who, in the midst of circumstances that have more than once caused others to become oblivious of country and profession, never forgot and never allowed others to forget that he was, before all else, an American and a dentist. His devotion to his profession was extraordinary and his unselfish ambition for its scientific advancement is evidenced in his own words, written not long after the beginning of his Paris career: "I may have but little to impart, yet that little is at the service of each and all members of my profession; and gladly would I hail the day that should make all that is sound in science and valuable in art common property. By the discussion of subjects connected with our profession and by the contribution of



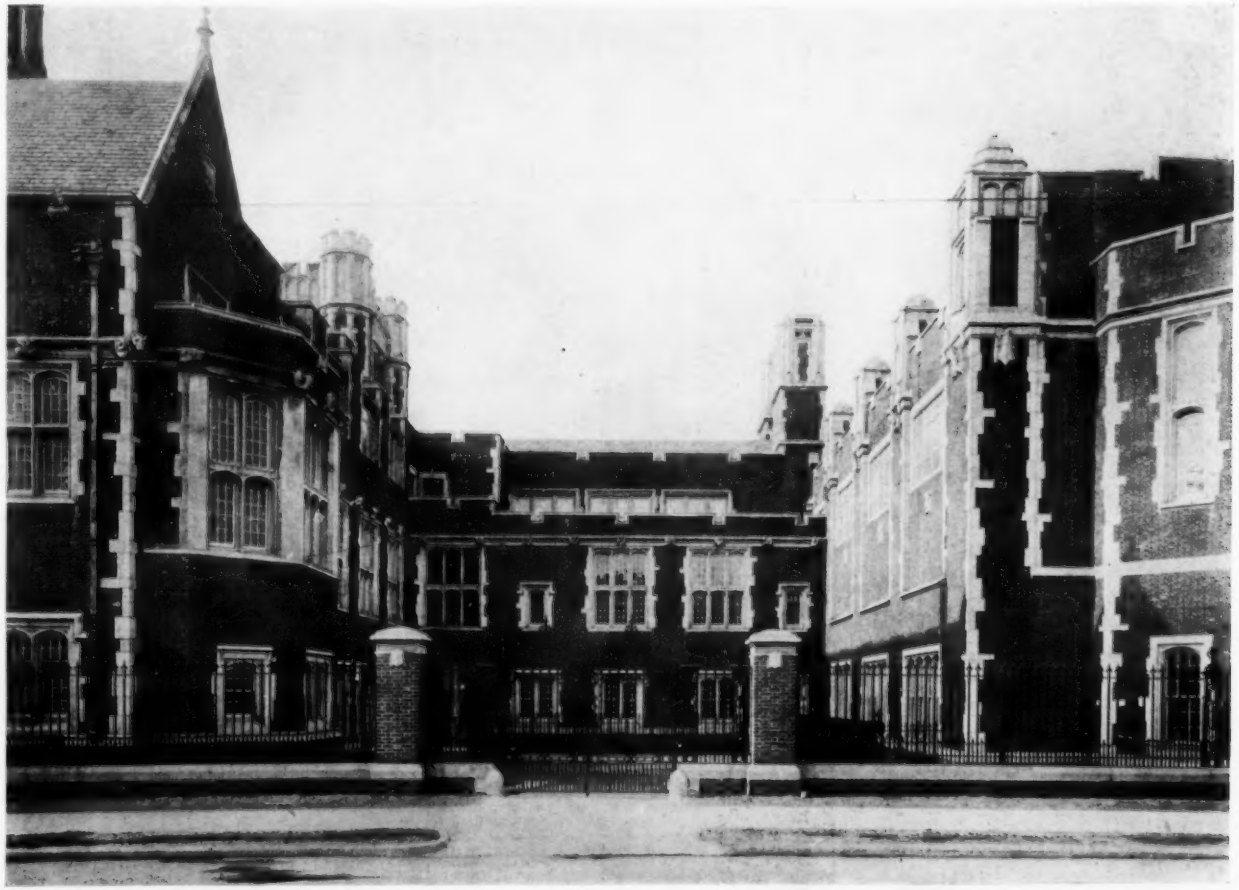
MAIN ENTRANCE—EVANS MUSEUM AND DENTAL INSTITUTE, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA. JOHN T. WINDRIM, ARCHITECT.

MAIN STAIR HALL—EVANS MUSEUM AND DENTAL INSTITUTE, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA.
John T. Windrim, Architect.

each according to his ability. . . . we shall better serve the generation in which we live." When the time came to provide generously for the foundation of an institution designed to promote the interests of the science of dentistry, it is not surprising that a man, actuated by the sentiments just alluded to and amply blessed with both wealth and influence, should lay plans largely, "according to his ability." This he did for the building and equipment, exclusive of the site, which itself is exceedingly valuable, have cost more than $900,000 and no expense has been spared to make it the most complete institution of its kind in the world.

Thanks to judicious and well-calculated planning and the most painstaking care bestowed upon all practical details, it is safe to say that the Evans Museum and Dental Institute, in facilities for operation and thoroughness of appointments, has no superior and few, if any, equals. By long experience of a wide practice, dealing to a great extent with comprehensive undertakings that require special consideration for points of practical efficiency, Mr. Windrim was eminently well fitted to cope successfully with any problems in this field that might present themselves. Not only was the museum to be housed and adequate accommodations provided for the School of Dentistry, which at the present time consists of a teaching staff of 83 professors and instructors and 665 students, but allowance had also to be made for the clinical treatment of free dispensary patients, of whom there are about 40,000 a year. Besides this, there were several other important considerations to be taken into account. Ease of ingress and egress and facility of communication between the several parts of the building, without congestion or confusion at any point in the corridors, had to be assured and, furthermore, due allowance had to be made for future growth, contemplating an appreciable increase both in the number of students and in the number of free dispensary patients frequenting the clinics.

After the conclusion of vexatious litigation, in the course of which the availability of at least a portion of Dr. Evans's bequest was assured for fulfillment of



EAST FRONT—EVANS MUSEUM AND DENTAL INSTITUTE, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA. JOHN T. WINDRIM, ARCHITECT.

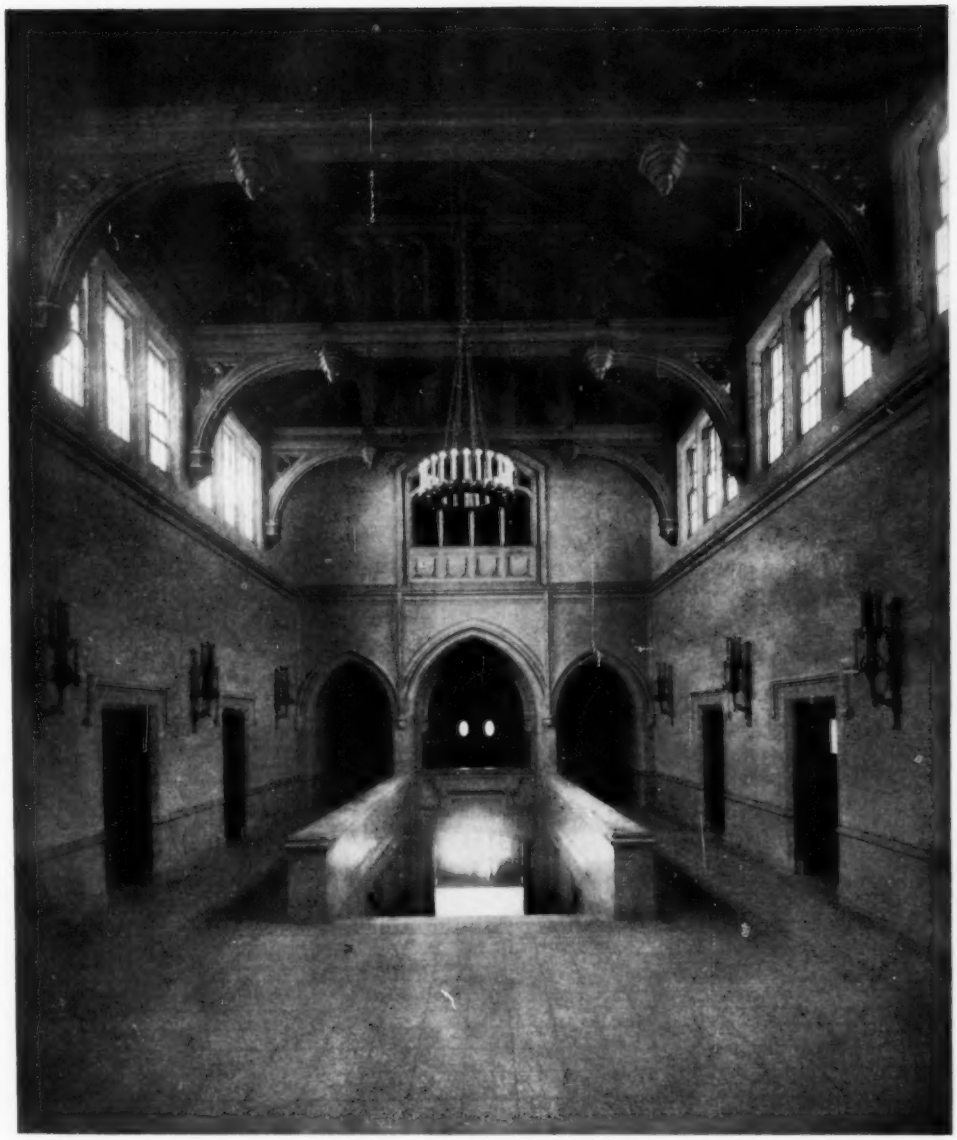
the purpose to which he had designed it, ground was broken for the building in September, 1912, and the cornerstone was laid in May, 1913. Immediately after the dedication ceremonies on February 22, 1915, the School of Dentistry moved into its new quarters. The structure, of hard-burned brick with Indiana limestone and terra-cotta trimmings, is in the form of the letter H and displays an unbroken frontage of 242 feet along Spruce street, while in depth it extends for 161 feet on Fortieth street. There is a spacious basement and, above it, the ground, second and third floors are lofty and exceptionally well lighted. In the basement, to which the principal approach is by a stair descending a short way from the main entrance on Spruce street, are large locker rooms and lavatories for the students, a commodious dining-room for the students and, adjacent to it, a fully equipped kitchen, a separate dining-room for the faculty, laboratories for modelling, plaster casting, moulding, soldering, swaging and metallurgical work, shops for polishing and grinding, such lecture rooms as may be necessary in immediate proximity to the shops and laboratories and store rooms for supplies and apparatus.

While a close examination of the floor plans reveals the convenience and thoroughness of the provision for all practical requirements in the daily use of the building, it does not reveal the punctilious care bestowed to ensure good lighting, perfect cleanliness and ease of maintaining thoroughly sanitary conditions, all of them features of more than ordinary importance in a building of the sort under investigation. The structure stands on a slope so that a large portion of the western end is above ground and receives ample light from large windows. In the other parts of the basement, the windows open into wide areaways lined with white glazed brick so that the interior receives the maximum possible light both direct and reflected. In connection with the question of lighting, it is especially worthy of note that the walls throughout have been painted either grey or a light sage green to avoid the trying effects of eye fatigue due to staring white walls. This system of wall coloring has been consistently carried out through the entire building and emphatically marks the modern revulsion from the long-accepted convention that made the walls of hospitals, and all other buildings where stress was laid upon sanitary considerations, an uncompromising white or cream color. Spotless white may be all well enough as an infallible betrayer of dirt and incentive to scrupulous cleanliness, but the present generation has surely been sufficiently impressed with the paramount necessity for sanitary precaution to be allowed to pay some regard to the comfort of the eye instead of perpetually scrutinizing every square inch of wall surface for visible evidence of sanitary laxity at the cost of inevitable strain and weariness to the optic nerve.

The scheme of restful green paint has been carried out with reference to all the metal furniture and equipments—cabinets, lockers, operating chairs, tables and the like—which are finished in tones ranging from sage to olive and are of the most approved pattern, embodying the latest improvements in every particular.

The floors are paved with composition flooring and all the angles at junctions of floors and walls are coved so that there are no unsanitary corners. Care in this particular has even been extended to the doors and door trims. The doors are made without panels and show a perfectly smooth surface of dull finished wood on both sides. The door trims are made without mouldings and are merely bevelled. Incidentally, while meeting sanitary requirements, a pleasing architectural effect has been achieved.

On the ground floor, the east wing, to the right of the entrance, is devoted to the museum, while the west wing contains the general office, the board room, the dean's office, the general waiting room for dispensary and clinic patients and the extracting room. By a commendable arrangement, free patients applying for clinical treatment are received and registered in the general office, immediately to the left of the entrance. Thence they are sent to the waiting room directly across the corridor. From there they may be taken to the examination room



MAIN STAIR HALL—EVANS MUSEUM AND DENTAL INSTITUTE, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA. JOHN T. WINDRIM, ARCHITECT.

ENTRANCE LOBBY—EVANS MUSEUM AND DENTAL INSTITUTE, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA.
John T. Windrim, Architect.

nearby, where a record is made of their case, or else, if they have been examined at a previous visit, they receive their card at the record desk and are distributed to whichever one of the clinics, on this floor or the floor above, may be their destination. As the clinics or other rooms which patients may have occasion to visit are all ranged about the main hall on the ground floor, or at the head of the stairs on the floor above, the circulation of an outside element is confined to one portion of the building. The building is so planned also that the students of one class, passing to and fro, will not come in contact with the students of other classes. Everything, in fact, has been done to facilitate the orderly operation of the building, a momentous consideration where the frequent and convenient circulation of so large a number of people must be reckoned upon. Special mention should be made of the operative clinic, a view of which is shown in one of the accompanying illustrations. This room contains one hundred and thirty-four operating chairs with ample space for all the accessories pertaining to each and the supply and record offices are adjacent. A flood of light is thrown directly into the mouths of the patients by a range of broad and high windows which are carried up into and form a part of the roof slope. In fact, as may be seen, nearly the whole north side of the room is of glass. On the same floor, the library in the tower, immediately above the entrance, and the main lecture hall, in the east wing over the museum, are conveniently accessible. A detailed scrutiny of the plans of all the floors shows ample provision for every facility for undergraduate study and clinical work and for post-graduate research.

So much for the purely practical side of the building. How any institution could be more complete in its appointments or more thoroughly meet all

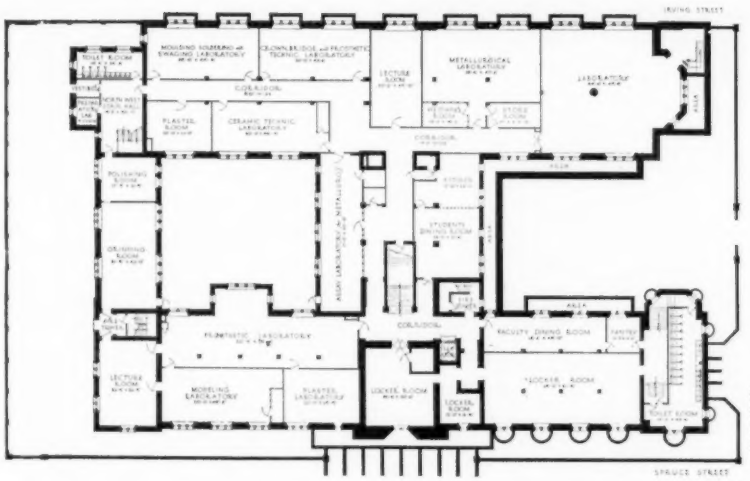
OPERATIVE CLINIC—EVANS MUSEUM AND DENTAL INSTITUTE, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA. JOHN T. WINDRIM, ARCHITECT.

utilitarian requirements for its highly specialized purposes, it would be difficult to conceive. For this thoroughness and foresight alone, which necessarily entailed a far reaching study of the innumerable details and the conditions existing or likely to arise in connection with the operation of so large a building, the highest credit is due and cause one to hesitate before calling attention to certain shortcomings on other scores.

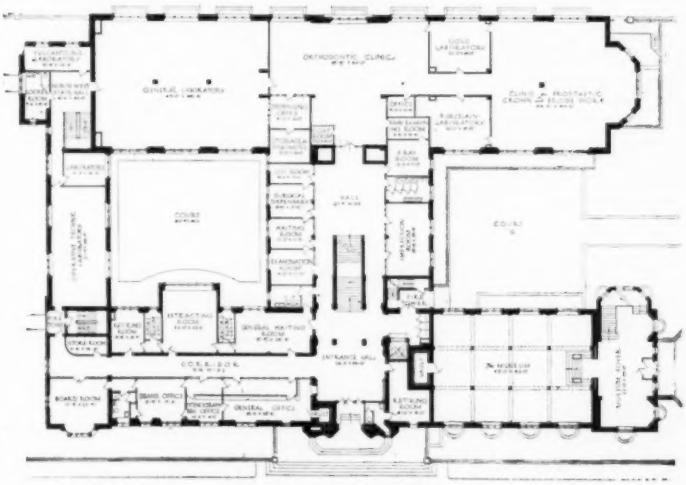
The structure is impressive in the disposition of its masses and the general aspect is decidedly agreeable but one is forced to admit, unwillingly in the face of so much laudable excellence in a practical way, that there are some disappointments when the examination is based solely upon an architectural point of view. It is true, the disappointments are chiefly to be found in small features and details but it must be remembered that it is the little things, the humble details that, after all, make or mar our pleasure in the contemplation of any piece of architectural achievement, large or small. One of the factors that contributed so largely to the pleasure of the public in witnessing Mr. Mansfield's productions was the scrupulous and exacting care he always bestowed upon the minutest details of costume and stage setting, that they should be absolutely right historically and archaeologically as well as artistically. Consequently his presentations were past criticism in that respect. Mr. Mansfield's solicitude for little things was proverbial, for he well knew their value and importance in the aggregate for creating tone and giving pleasure, whether or not individuals in the audience might be sufficiently discriminating to analyze correctly the elements of their enjoyment. It is precisely the same in architecture; the little things count in the measure of our appreciation far more than most people realize. Mass, construction, proportion and plan are most important. The big things must be right, but the details must be right, too, and if they are not it is hardly to be expected that people of discriminating taste will derive lasting pleasure and saisfaction from contemplating the result. It is not necessary that the liberty of invention or originality be hampered by a narrow, hidebound stickling for academic exactitudes—that would be mere archaeology—but there are certain fundamental amenities of proportion, of the use of materials and of the contrivance and placing of ornamental detail, the observance of which in any structure seems requisite to sincere enjoyment on the part of the observer.

In color effect, the Evans Museum and Dental Institute is exceptionally pleasing. The body of the building is constructed of a hard-burned red brick, irregularly blotched with deeper tones verging from purple to black. The courses are laid in Flemish bond and the surface of the brick is rough enough, together with the veining of the mortar joints, to impart a highly agreeable texture to the walls. The desirable note of contrast comes in the Indiana limestone door and window trims, coping, string courses and quoins. As to its proportions, the building has a substantial and dignified mien without being in the least stolid or heavy. The composition is good and the balance of the south front commendable, although one could wish that circumstances might have permitted a structure of slightly less height. Had such been the case it would have been possible to achieve a result of greater interest in the particular style of architecture chosen, a style which lends itself with peculiar readiness to felicitous expression in long ranges of comparatively low buildings. Witness many of the low-lying collegiate buildings in England and some of the more recent work at Princeton and in several other places in our own country.

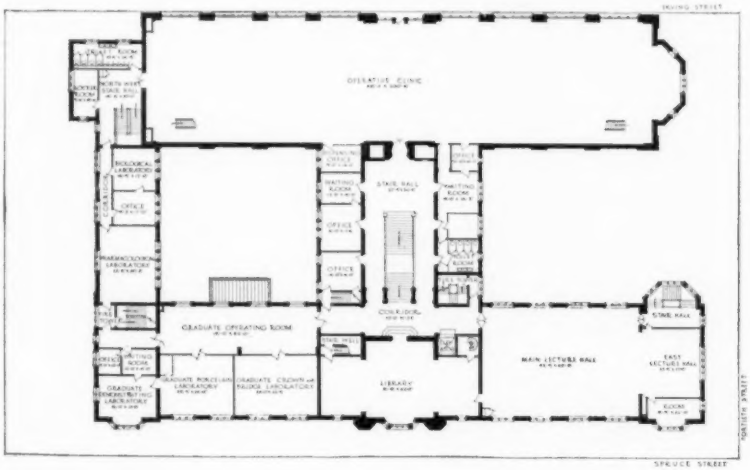
If the limits of a city site and the requirements of certain space within had not imposed definite conditions that had to be met, it would doubtless have been possible to give the tower more dominating emphasis. As it is, nevertheless, the tower is exceedingly impressive. In fact, the whole structure, whether seen from a distance or viewed at close range, is striking and has so many good qualities that one is all the more disappointed on finding some of the shortcomings re-



Basement.

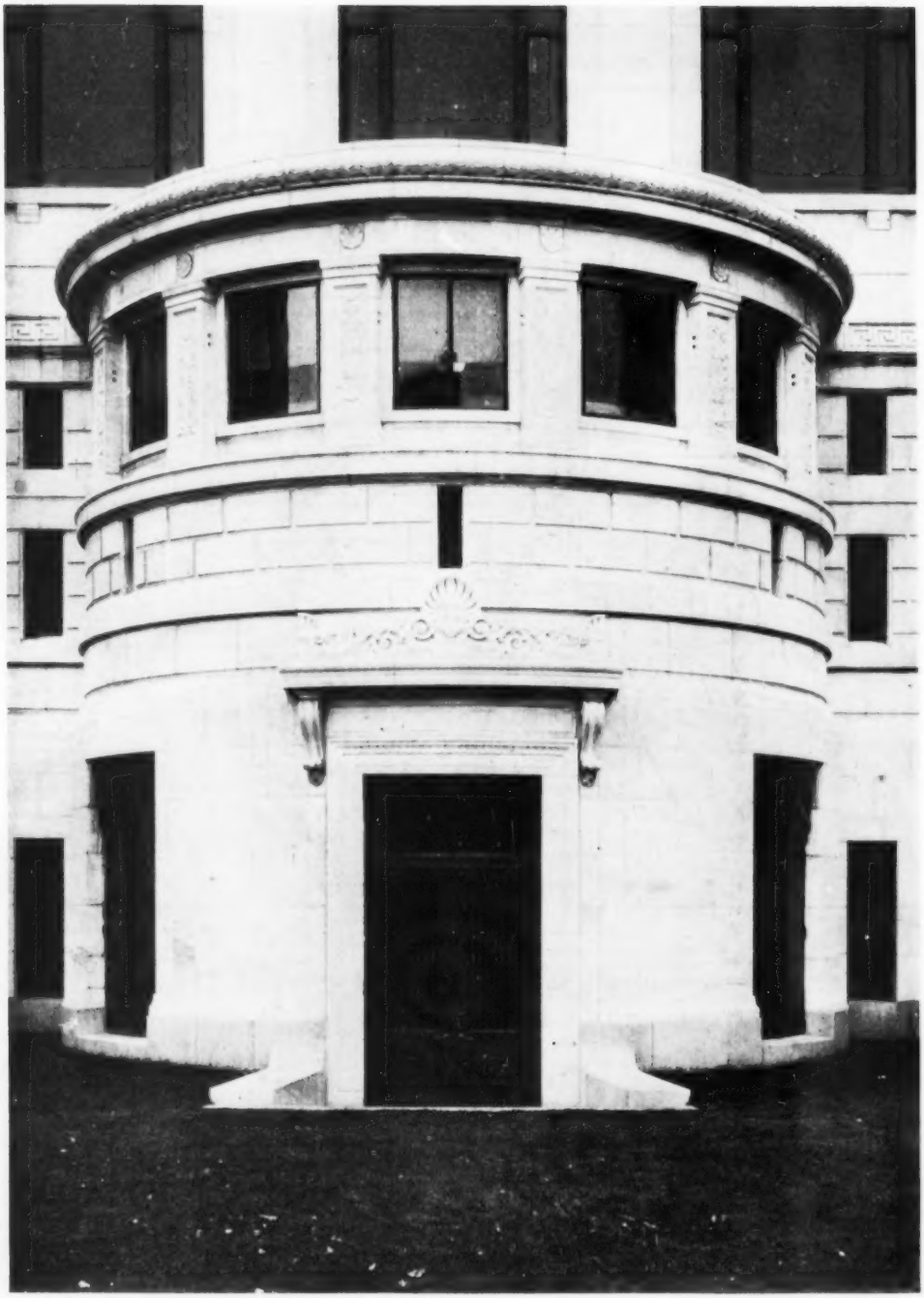


First Floor

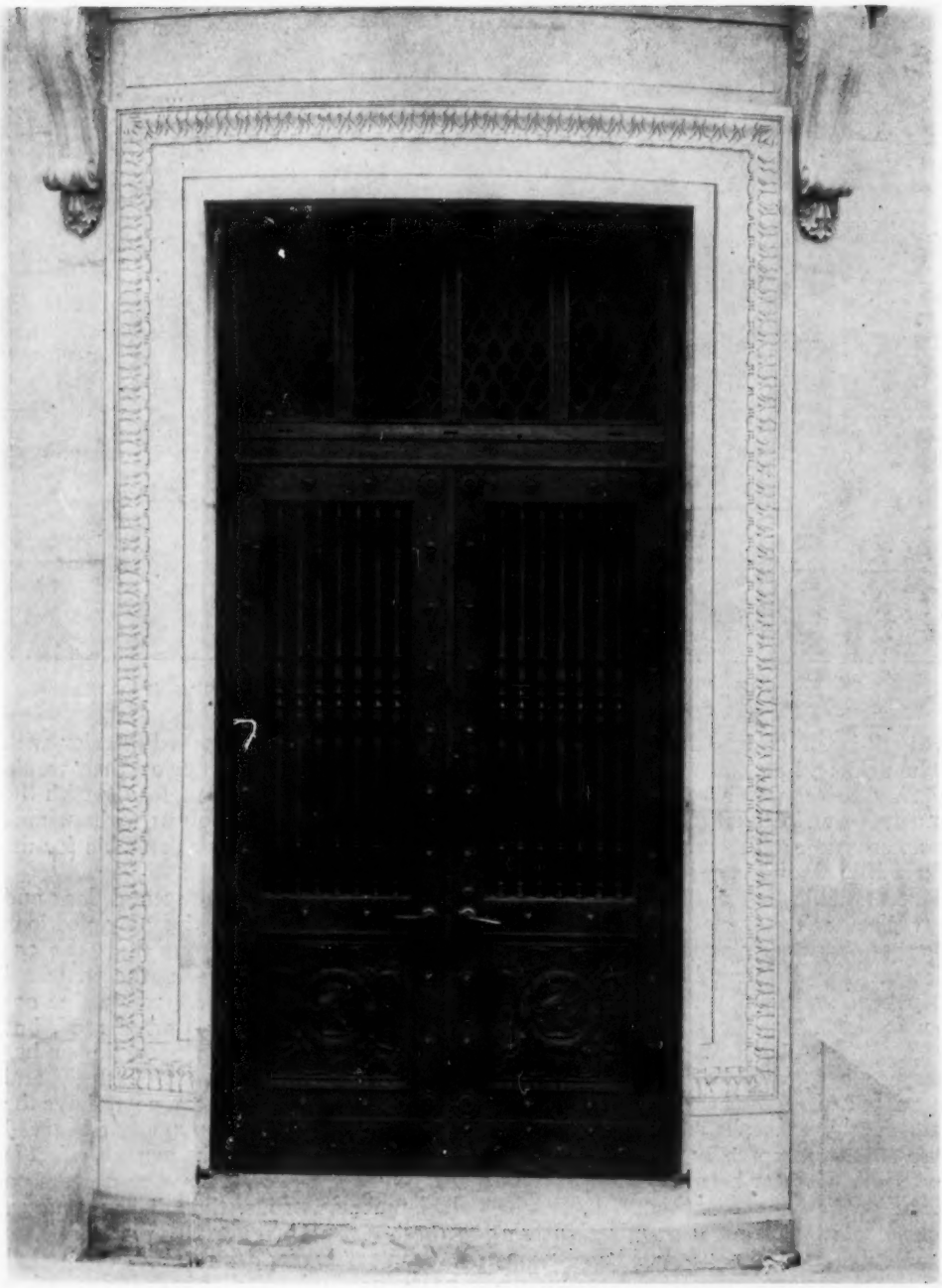


EVANS MUSEUM AND DENTAL INSTITUTE. JOHN T. WINDRIM, ARCHITECT.

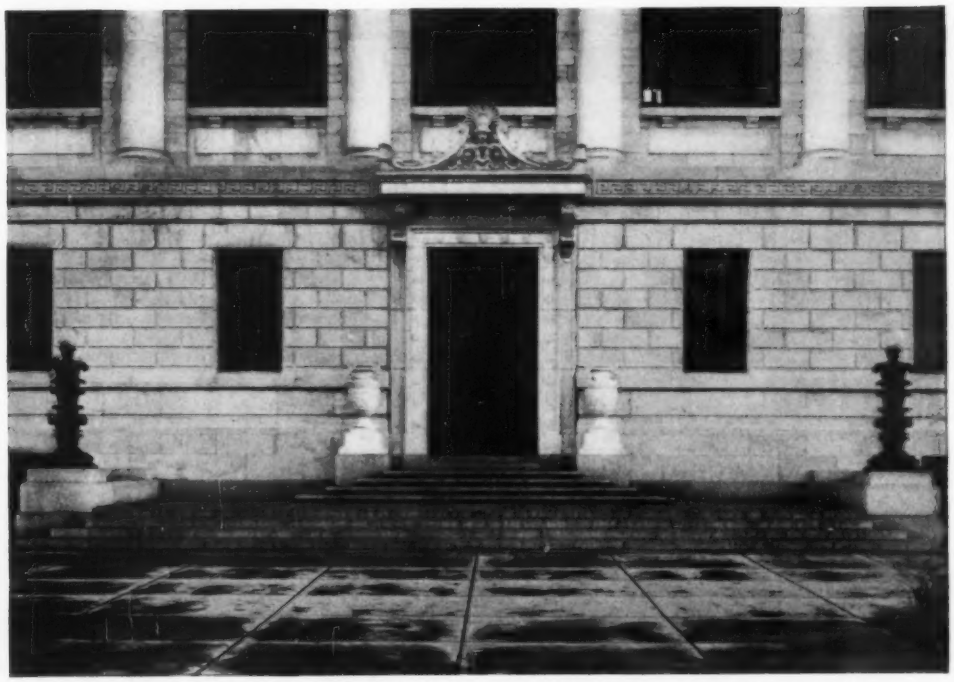
Second Floor.



ENTRANCE TO CLINIC—FORSYTH DENTAL INFIRMARY FOR CHILDREN, BOSTON.
EDWARD T. P. GRAHAM, ARCHITECT.



BRONZE DOORS OF CLINIC ENTRANCE—FORSYTH DENTAL INFIRMARY FOR CHILDREN, BOSTON. EDWARD T. P. GRAHAM, ARCHITECT.



MAIN ENTRANCE—FORSYTH DENTAL INFIRMARY FOR CHILDREN, BOSTON.
Edward T. P. Graham, Architect.

vealed by a more intimate inspection. The principal entrance is through an imposing portal which leads one to expect much but unfortunately the sense of proportion and architectural fitness is sadly jarred by finding a jejune and insignificant vestibule that does not bear out the promise of the exterior. It seems almost as though exterior and interior had been designed by different hands working independently to interpret wholly diverse conceptions.

A similar lack of architectural coherence is apparent elsewhere, for in a number of instances the interior does not sufficiently reflect the mode of expression one is led to expect by the aspect of the exterior. Greater harmony of style could have been preserved without doing violence to any essential requirement demanded by utilitarian considerations or practical expediency. The museum offers a case to point this criticism. The tall quadrangular columns and the plain, crash covered walls assuredly do not echo the exterior. Here was an opportunity missed to create a panelled interior with excellent effect, an interior that would have been altogether in keeping with the architectural promise given without and, at the same time, quite as suitable for the display of the exhibits.

The great hall on the second floor and the library are really the only portions of the interior where one finds the expected conformity with the external aspect. In the hall there was a fine opportunity for an open timber roof, but what should have been open timber has been metamorphosed into steel and plaster, and cast metal can never have the fluidity of line and spontaneity of carved wood. Nevertheless, the general effect is agreeable and would have been more so had more vigorous, though harmonious, coloring been employed, such as was customary in English roofs of the period reproduced, instead of the somewhat evanescent hues suggestive of a later Continental inspiration. The travertine-faced walls of the great hall are exceptionally pleasant. One queries, however,

WEST FRONT—FORSYTH DENTAL INFIRMARY FOR CHILDREN, BOSTON. EDWARD T. P. GRAHAM, ARCHITECT.

BRONZE PANELS—FORSYTH DENTAL INFIRMARY FOR CHILDREN, BOSTON.
Edward T. P. Graham, Architect.

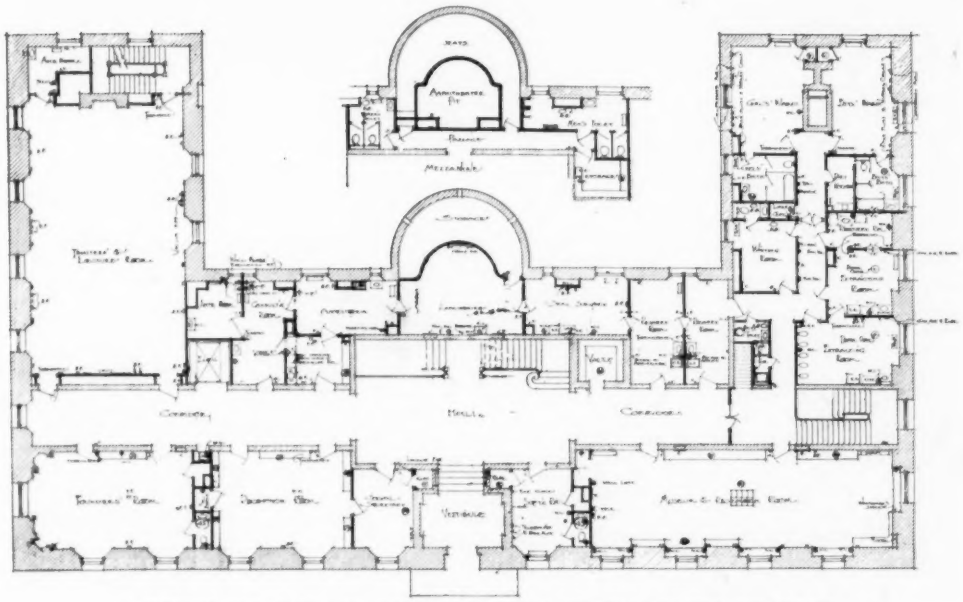
the appropriateness of putting heavy dripstones over inside doorways. It is surely not logical to do so and architectural ornament ought to have some substantial *raison d'être*, for it will almost invariably be found that the sundry forms of architectural ornament, at least the quasi-structural forms, had their origin in practical utility.

Great admiration is due the capable treatment accorded the Evans Museum and Dental Institute in respect of its comprehensive plan, which adequately meets the manifold demands made upon it, and commendation is due the composition of the *toute ensemble* for, despite the unfulfilled desiderata to which attention has been directed, the building presents an imposing appearance and bears a stamp of distinction which cannot fail to redound to the credit of the University of whose buildings it now forms an important unit.

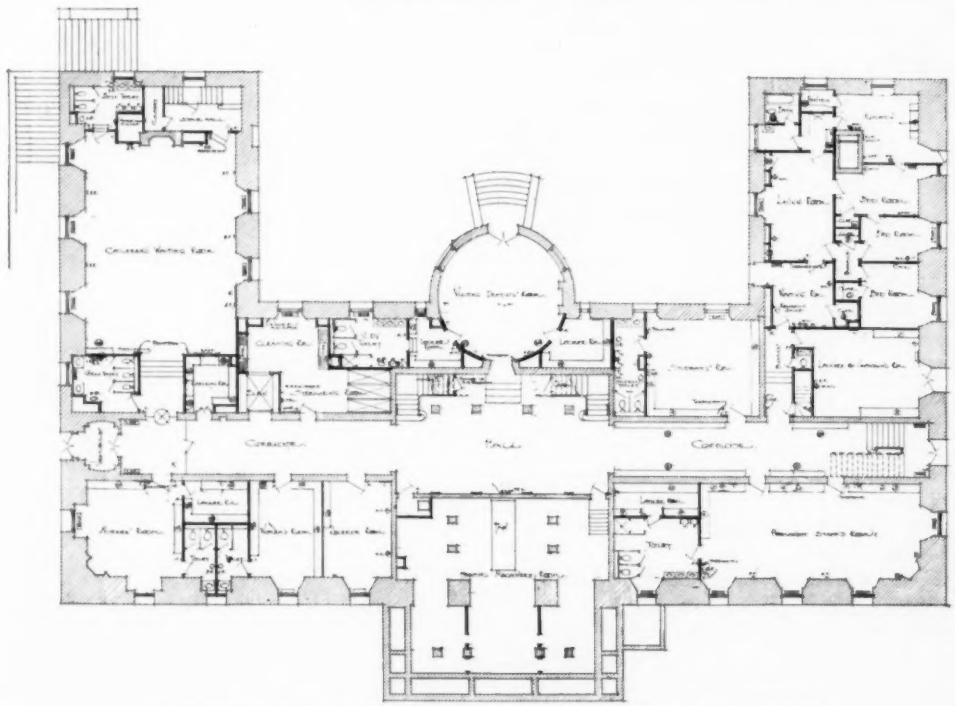
The Forsyth Dental Infirmary for Children, on the Fenway in Boston, designed by Edward T. P. Graham, is the second building claiming attention in this article. An inspection of its plans reveals a complete and convenient arrangement in basement and on the first and second floors. In the basement are quarters for the permanent staff, the children's waiting room, the visiting dentists' room and sundry smaller offices. So much of the basement is well above the level of the ground that there is abundance of light, quite as much as many buildings, more closely hemmed in by other structures, would have on the ground floor. The first floor contains an operating theatre, a large museum and research room, a lecture room and the necessary reception and waiting rooms and small offices for various purposes. The second floor is almost wholly occupied by the infirmary.

A survey of the exterior brings with it a sense of satisfaction. There is a finish and completeness in its aspect that cannot be other than gratifying and the observer feels at once that it is a worthy and representative addition to the series of buildings being systematically erected, according to a well conceived and coherent civic plan, along the Fenway in Boston, a comprehensive building project that does credit to public foresight and public spirit in that community and bids fair, in a few years, to transform what was formerly an unsightly waste into an exceptionally beautiful parkway.

The proportions of the building are singularly agreeable and the just balance between mass and detail is carefully preserved. The large amount of window space required in the walls of the upper story, to supply adequate light in the infirmary, is balanced by the strong corners and the procession of Ionic capped pilasters separating the windows on each side. The massive treatment of the basement and first floor walls affords a suitable support for the colonnaded treatment of the upper story. The composition, regarded as a whole, presents a happy combination of classic austerity and Renaissance geniality and the exquisitely wrought detail that occurs now and again



GROUND FLOOR PLANS—FORSYTH DENTAL INFIRMARY FOR CHILDREN.
Edward T. P. Graham, Architect.



BASEMENT PLANS—FORSYTH DENTAL INFIRMARY FOR CHILDREN.
Edward T. P. Graham, Architect.

PANELS ON DOORS OF CHILDREN'S ENTRANCE—FORSYTH DENTAL INFIRMARY FOR CHILDREN, BOSTON.
Edward T. P. Graham, Architect.

at different points of the building impresses one that the conception, while strong, is urbane rather than severe.

Where a bit of pleasantry or playfulness can be consistently introduced without derogating from the dignity of an architectural composition it always affords a desirable feature and lends a certain unique character. Such a charming bit of playfulness we find successfully introduced in the exquisitely wrought panels of the bronze doors of the children's entrance, executed by Roger Burnham, where scenes from "Alice in Wonderland" and "Uncle Remus" are depicted in a way to attract and delight the unfortunate little patients who cross the threshold.

One can readily imagine that the feelings with which the young sufferers enter the building are not the most happy in the world and it is surely very appropriate to place anything before their eyes that may serve to divert them from thoughts of their discomfort and cheer them. If anything can do it, the grin of the Cheshire Cat and the attitudes of Brer B'ar and Brer Rabbit will.

The stone carving at various points of the exterior and the refinement of the modelling displayed on the other doors shown in the illustrations, speak sufficiently for themselves without comment. On regarding the building carefully one can truly say that it is wholly fit for its intended purposes, judged from a purely practical and utilitarian point of view and that in its architectural aspect it measures up to high standards. Its conformity to academic conventions has not impaired the vigor and originality of individual expression. The comparison of both buildings and their several points of excellence forms an instructive chapter in the study of recent architectural performances.

Certain Phases of Spanish Colonial Architecture

By Marrion Wilcox

AT the beginning of the present century it was said, and with good reason, that Spanish architecture had, even then, exerted a notable degree of influence upon the principles of design and of ornament as applied to building in the United States; that the Mission Architecture of California had proved to be, most happily, a source, as it were, of true inspiration; and that our architects who resorted to this source of inspiration had produced excellent work in the Western States.

Those observers who had studied in Spain and Latin America noticed the extension to all parts of this country of principles of construction derived, either remotely or immediately, from the Iberian Peninsula, and suggested, naturally, that one of the results of such events as our wars in Cuba and the Philippines would be to make the study of Spanish-Colonial architecture of particular interest in the future.

Now we are in the midst of that future: now, looking back, mindful of superb though very new examples of Spanish Free Renaissance buildings that to-day may be seen in Washington and at several other points in the Eastern States, we are fairly obliged to notice a growing tendency during the last decade in the United States to accord to Spanish-Colonial architecture at least its due share of influence.

I gladly leave to others the privilege of comment upon those tendencies which, at home, are manifesting themselves in the fashion of adapting such a well-derived foreign style to our own needs and practices. My purpose is, in this brief study, to indicate tendencies that have run their course in two great and ancient centres of Hispanic culture in the Western Hemisphere—Peru and Mexico; and it seems convenient to begin with observations actually made in the famous Torretagle house in Lima, July 7, 1906.

This house, confronting the Casa de Ejercicios del Sagrado Corazon is said, and I think truly, to be the only fine private dwelling in the Peruvian capital that still preserves its original form. It may be regarded as typical of the house of the old West Coast aristocracy at the beginning of the eighteenth century. There is much carved wood on balconies, ceilings, shutters of the windows; and certainly the effect produced by this ornamentation, overemphasizing details to which it is applied, is striking, literally: it challenges attention when one first sees the facade or passes from the street into the large *patio*. But the details are insubordinate: therefore all those agreeable intimations of serenity with stability which a noble old mansion should convey are lost.

This is not, one reflects, a beautiful house—not really to be ranked with fine old Italian and English houses. Well, why should we expect to discover good art in these West Coast countries? Their conquest was effected by rough soldiers. Architects, painters, sculptors did not usually join the bands of the conquistadores; and it seems quite clear that even at a later period they neglected to come out in sufficient numbers to make their presence felt in the direction and control of public taste, for there is little or no evidence of innate sense of form and line, or even of very high ideals, in the works of art one is apt to see at first, although elaborate proof is at hand of the artisans' demonstrated skill in handling wood (Fig. 1) and stone. And again, what kind of artistic propositions

should we expect from the people of mixed blood—the Indigenes having been content before the conquest to produce in all the arts such things as to us appear to be nearly devoid of beauty?

Reply to such questions and objections as these I sought faithfully though critically in the course of long journeys into many parts of Latin America. Gradually it became evident to me that the natives had shown an almost marvelous degree of patience (patience rather than the quest of beauty having been their ideal) and of manual dexterity in the execution of such works as their European masters had been able to plan. Moreover, these masters, being masters also of the enormous treasure of the land, were actually enabled to secure from time to time the services of a few competent architects: in this respect one's first impression undergoes decided revision as the field of study becomes wider.

At the Recoleta—inviolate home of the Franciscan Order in the outskirts of Cuzco—we read, as it were, an early chapter of the same story. Here is the Franciscan severe interpretation of the art of the mother country in the sixteenth and seventeenth centuries: "Toribio de Fustamente, fundador de esta santa casa" —thus runs the inscription on the founder's portrait—"murio el año 1619. Esta enterado junto al altar major de este convento, que acabo año 1601." He finished it indeed in the year 1601. Its design undoubtedly has been modified, yet without inharmonious changes, in later years—although the clock I asked the Cuzco student, my assistant that day, to photograph (the clock in the wall, beside the precious old shrine), was placed right there, the Cuzco student assured me, in that very same wall, at the beginning, when it had but one hand, and there has remained since the convent's foundation! (Fig. 2 shows the shrine, the pictorial value of which is, I think, enhanced by omission of the ancient clock-face.)

Gentlest feature perhaps of all is the *patio* (Fig. 3), the arches of which are seen above or through foliage of *retáma, floripondio, sauce, pino, pino chileno, nucau, durazno, capuli, rosas con flores diferentes, fuchsia,* and *cedroncillo;* this being a true list of plants in the irrigated undated garden—charmingly artistic garden of an arid skyland—the garden of the convent's *patio* or inner court. Much cheerful talk there was, I remember, with Rev. Franciscan Father José Gregorio Castro and his associates while we walked about in every part of the building, surveying the Recoleta's art treasures—which generally represent death, and extreme suffering either before or after death.

And this Recoleta may stand for the Peruvian phase, barely suggested in such a brief note, of the Franciscan structures about which there will be more to say when we come to Mexico.

But before coming to Mexico we must speak of the most characteristic Peruvian phase, as follows:

The city which, more than any other West Coast city, should be regarded as a home of culture in general, and therefore specifically a centre from which control and direction of the fine arts has proceeded, is the interesting place called on the maps Arequipa. The Peruvian "Tarrytown," we may call it, since the name Arequipa signifies in the Indian tongue, "Yes, rest here." But orderly processes of architectural development were rendered impossible in Arequipa, even more infeasible there than in other populous cities, mountain-built or on the Andean littoral. Repeated and very violent earthquake shocks forbade such edifices as would have been stable enough in other lands to "rest here"—or there or, in security, anywhere near the geosynclinal that follows the Andean coast line. The cathedral at Arequipa, formerly more imposing than it is at present, is built of volcanic stone "in a style adopted," as a famous traveler writes, "after the earthquake of 1821, which laid most of the city in ruins, as a security against similar catastrophes." Better than any other large building I know, it represents the earthquake phase. It is an expedient, complying with, while bravely protesting against, imperative demands of the plutonic forces: not towered and domed, like the cathedral and the Compañia at Cuzco, but capped with

FIG. 1. EXAMPLE OF WOOD-CARVING
IN THE CATHEDRAL AT CUZCO, PERU.

spires in the fashion of the church of San Pedro in Lima. We may scorn it —in a photograph, but shall not easily do so in its own proper environment. Orderly processes of development, we repeat, having been interrupted in all this region, to what rank shall we assign the Arequipa cathedral (Fig. 4) and the other West Coast "expedients"? These external columns, supporting nothing, are architecturally indefensible, one may be tempted to say. But in the late afternoon the sunlight catches the tops of the small trees in the plaza and the more prominent pillars of the cathedral, making the gray, long façade, with its surplusage of columns, seem vigorous enough to support the load of Atlas; catches the top of that destructive volcano called Misti, making its enormous mass look like an imponderable cone that one could walk to before sundown, though in fact to reach that summit and return would require two days' hard riding and climbing; so then Misti, with sky and clouds around it, drawing near in the picture at that hour, is apparently upheld by the array of otherwise unemployed columns. We shall, I think, classify this building with other justified devices or expedients as examples of exceptional environment, so remote from normal processes of architectural evolution that, like certain variants in biology, they have no issue. Therefore, or rather, for analogous reasons, we come upon a sterile West Coast period.

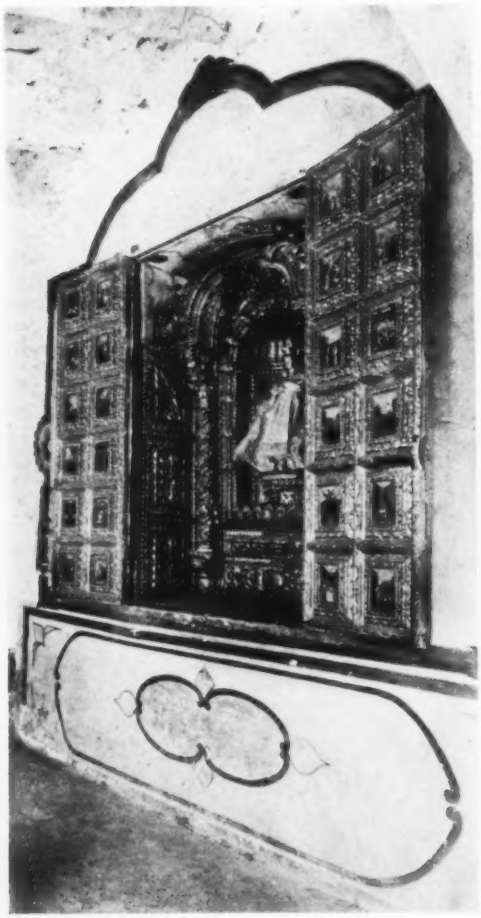


FIG. 2. A SHRINE IN THE CONVENT CALLED LA RECOLETA.

In Mexico only, among all Latin-American mainland countries, has Spanish-Colonial architecture secured its full and consecutive expression and development. We note here three main periods: 1. The earlier structures, erected soon after the conquest of Mexico, characteristics of which are massive strength and utter simplicity. A convenient designation is the one already employed, "Franciscan," or Early Franciscan: and the term forcibly connotates austerity, rejection of adornment, subordination of the æsthetic to the useful; yet we should not overlook the fact that the Spanish monarchs themselves, for the better protection of their colonial subjects, ordained that churches should be so built—for strength rather than for beauty, with battlements rather than ornaments—that they could serve as fortresses in time of need.* Civil and religious authorities were, of course, in absolute agreement. 2. Spanish Baroque. 3. The Churrigueresque period, from the first part of the eighteenth century to the end of the Spanish régime in Mexico. In its origin strictly and peculiarly Spanish, the Churrigueresque style may be likened unto seed falling into good ground and bringing forth delightful extravagances or absurdities "an hundredfold" only in

*Codification of the *Leyes de Indias*, Madrid, 1681, Vol. II., folio 91. Cited in "La Arquitectura en México. Iglesias." by Antonio Cortés, Mexico, 1914.

FIG. 3. PATIO OF LA RECOLETA, NEAR CUZCO, PERU.

FIG. 4. THE CATHEDRAL AT AREQUIPA, PERU.

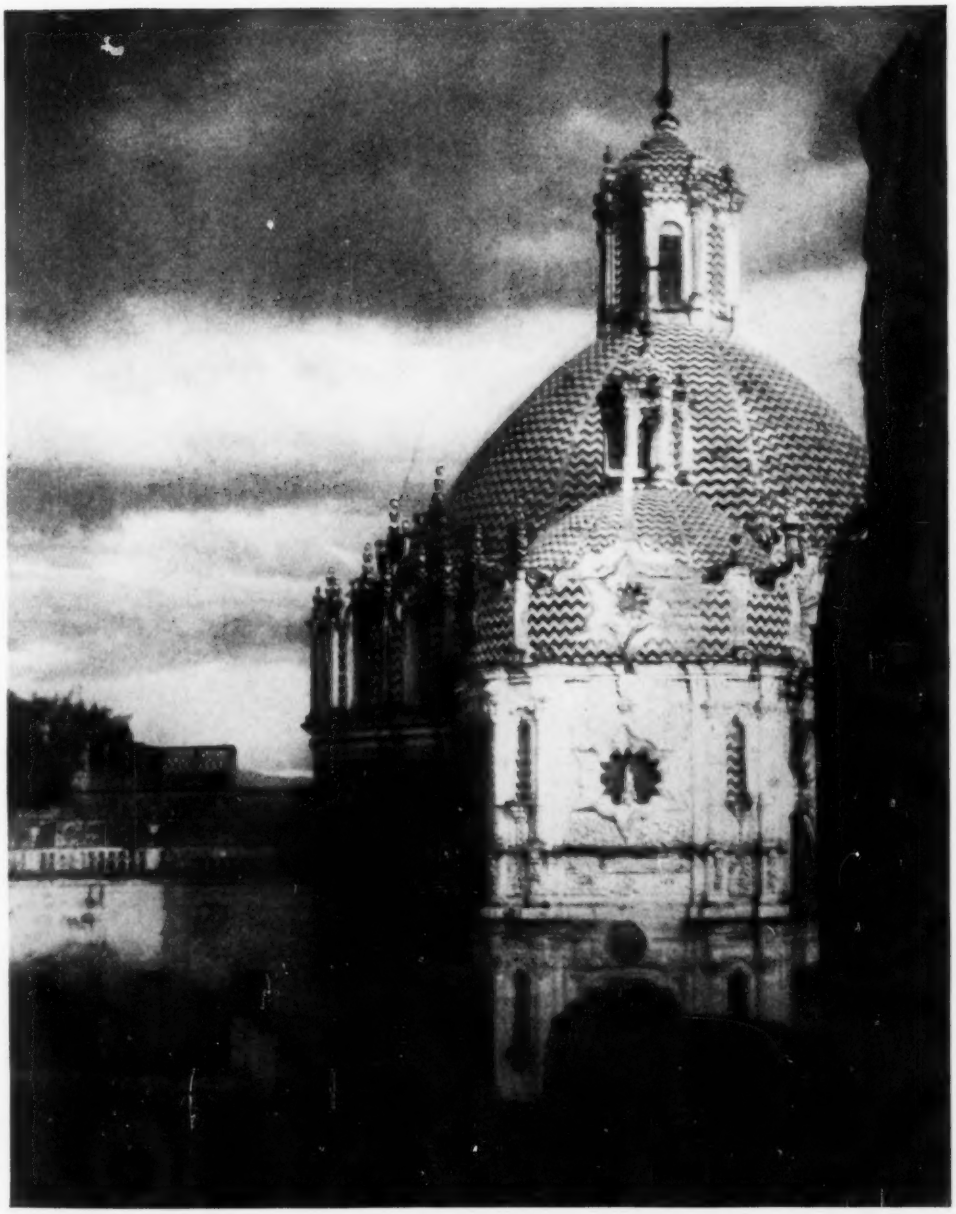


FIG. 5. THE CHAPEL OF THE WELL (LA CAPILLA DEL POCITO), AT GUADALUPE, MEXICO.

FIG. 6. BALCONY OF THE CATHEDRAL AT CUERNAVACA, MEXICO.

FIG. 7. PAROCHIAL CHURCH
OF TAXCO, GUERRERO, MEXICO.

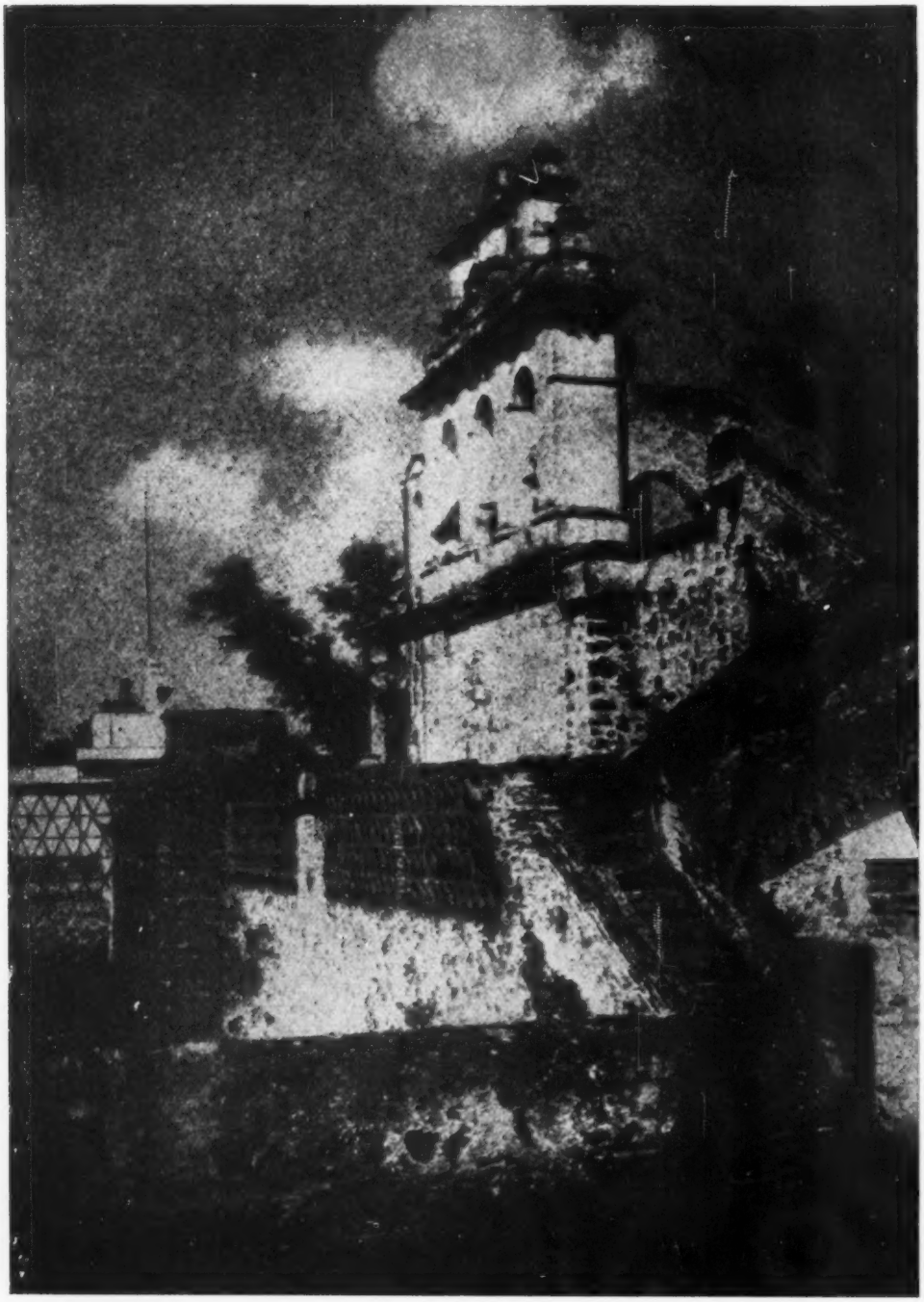


FIG. 8. MONASTERY IN SAN ANGEL, MEXICO.

FIG. 9. CATHEDRAL AT CUERNAVACA, MEXICO, BEGUN IN 1529. THE TOWER (LEFT) WAS REBUILT IN 1721. CHURCHYARD SEEN THROUGH ARCHED GATEWAY. IN THE FOREGROUND (RIGHT) IS THE CHURCH OF TERCER ORDEN.

Spain and her colonies—nowhere else. The tendency was fully, often most extravagantly, expressed in Mexico to abandon structural simplicity in favor of mere ornamentation—of ornament for ornament's sake. We also note the survival of the artistic traditions of the aborigines, as this perpetuation is clearly shown, for example, in the decoration of the façade of the seventeenth century *Tercer Orden* church that stands by the arched gateway giving access to the cathedral at Cuernavaca. Señor Cortés writes succinctly: "Because the artisans who built the structures of the conquerors were natives, the new architecture retained characteristics that remind one of the ancient Mexican decorative art, as we even now may see in the chapels of the Hospital de Uruapan, State of Michoacán, of Sanctórum of San Joaquín, Federal District," etc. A tendency plainly discernible in recent years—this is a conclusion based upon my own observations in Mexico in 1907—gives most positive assurance of the revival of ideals in art (such as they were) that prevailed before the conquest: a Nahuatl-Aztec Renaissance. And, finally, we note the universal acceptance by Mexican builders of the dome—an architectural feature perhaps Persian, certainly Oriental in origin, but popularized by great sixteenth century achievements in Italy. We must regard it as the predominating architectural characteristic of the country.

Impressive sincerity and simplicity, characterizing early Spanish-Colonial buildings, gave place to styles that Mexican art critics themselves call decadent. Familiar examples of Spanish Baroque are the church of Santo Domingo in

Oaxaca, and the chapels of Santo Cristo, in Tlacolula and of Rosario in Puebla. Recent comment by Señor Cortés on eighteenth century tendencies is fairly indispensable at this point: "In Spain, José Churriguera and his two sons, Jerónimo and Nicolas, were most active in promoting the Baroque, impressing upon it so much of their own personality that in process of time their interpretation of it received the name of 'Churrigueresque style.' The Churrigueras, far from inventing anything new, merely carried to extremes the decadent exaggerations of the Baroque style. Whereas the latter had respected the primitive simplicity of the column and panel and straight outlines and had safeguarded the natural independence of sculpture, the Churrigueras (on the contrary) transformed columns into pilasters covered with decoration, ornamented the panels, broke up all the lines, and made sculpture an integral element of the construction. By such means . . . they reduced architecture to an inferior rôle, and granted complete supremacy to decoration and ornamentation . . . great approbation was granted by our people to this style, which was so in harmony with our ardent and lawless imagination. . . ." Uncommonly interesting, as an admission on the part of an accomplished critic in Mexico. But let us now examine Mr. Ravell's excellent views (Figs. 6 and 9) of the Cuernavaca Cathedral, which was begun in 1529—its "old *balcón*," as this detail is called locally; and the comprehensive view showing, on the left, a tower rebuilt in 1721, the arched gateway through which the large churchyard is seen and, on the right hand, the church of the *Tercer Orden* of San Francisco (seventeenth century). Next, we may turn to figure No. 8, which shows the harmonious structural lines, unadorned, of the monastery in San Angel. Place between these photographs of the earlier structures the view (Fig. 7) of that perfect example of Churrigueresque, the Parochial Church of Taxco, Guerrero (completed December 3, 1758), with florid ornamentation on towers, above roof-level, and on façade vividly contrasting with those surfaces of the towers below the roof-level, which are plain: this sharp contrast being typically Churrigueresque. And, finally (Fig. 5), the Chapel of the Sacred Well (La Capilla del Pocito), in Guadalupe, near Mexico City, completed in 1791 by the architect Francisco Guerrero y Torres. In this group the history of Mexican architecture in the colonial period is epitomized. Ardent and lawless imagination sometimes produces work not one-half so charming as these sixteenth to eighteenth century buildings. Charming, certainly, though the quest of sharp contrasts has tended in the past and still tends ruinously toward excesses—at worst repulsive, at best recalling those observed in the Torretagle house.

DOORWAY IN THE COLONNADE OF THE NORTON HOUSE, EAST GOSHEN, CONN.

COLONIAL ARCHITECTVRE IN CONNECTICVT

Text and Measured Drawings by
Wesley Sherwood Bessell

PART III.

THE color note in Colonial work is the doorway, frequently the one spot of ornamentation. On it was lavished a wealth of resources to obtain matchless refinement and stateliness. No matter what manner of house you may come upon, if it is Colonial the doorway will surely arrest attention; only in the typical doorway of the smaller houses does one see repetition, in the others there is the widest variance.

The doorway of the large Pratt house, at Essex, has the flat pediment and pilaster treatment, with the frieze omitted in the pediment itself, but with a curved frieze in the entablature over pilasters; the modillions are of a type and design often seen in such cornices; the crowning mould is a cyma-recta, with a fillet and cove below, then a fascia, under which are the modillions. The pilaster cap is a quarter-round, bevelled on the top, a fillet and cove, with a half-round, and cove for the necking. This door, with the exception of the steps, is the original, and is a type of which there are many diversifications.

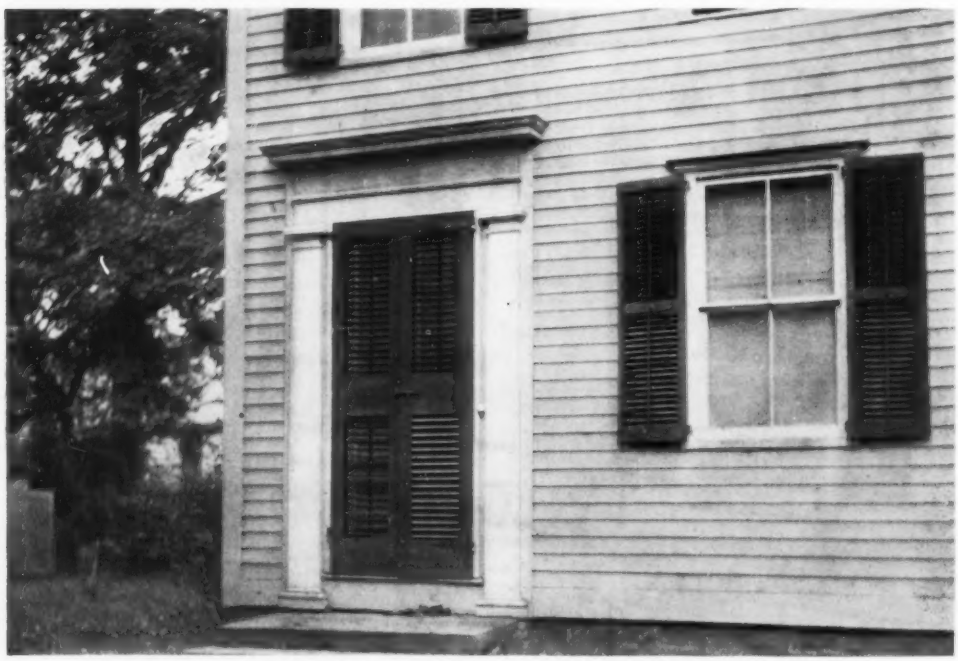
The detail drawing of the small Pratt house doorway, on Rope Walk, Essex, shows a doorway of the same character, but with a complete change of mouldings and an entirely new makeup. One has wide latitude in the designing of doorways; so many ways and means are at hand that there seems to be no end of possibilities. With these examples before us, we may create and improve; but doorways in the Colonial manner are

not to be placed promiscuously on all sorts of architectural compositions; use them consistently, and the charm is not lost. The pediment treatment may have been flat, with pilasters, or projected sufficiently to contain a disengaged column, then again it may be similar to the entrance doorway of the Perry House, at Litchfield, with its peculiar doubled supports. This doorway was built in 1771 by Lynde Lord. The cornice members are not composed as called for by Vignola, and seem a bit crowded in line on the upper portion. The dentils are very interesting, being long and cylindrical in form. The small supporting columns are exceedingly attractive. They are delicate and refined, and tapering from top to bottom, are two and seven-eighths inches in diameter at the top and four and one-eighth at the bottom. The side lights are curious in their curved muntins, and the whole butts into the overhang of the house as it will.

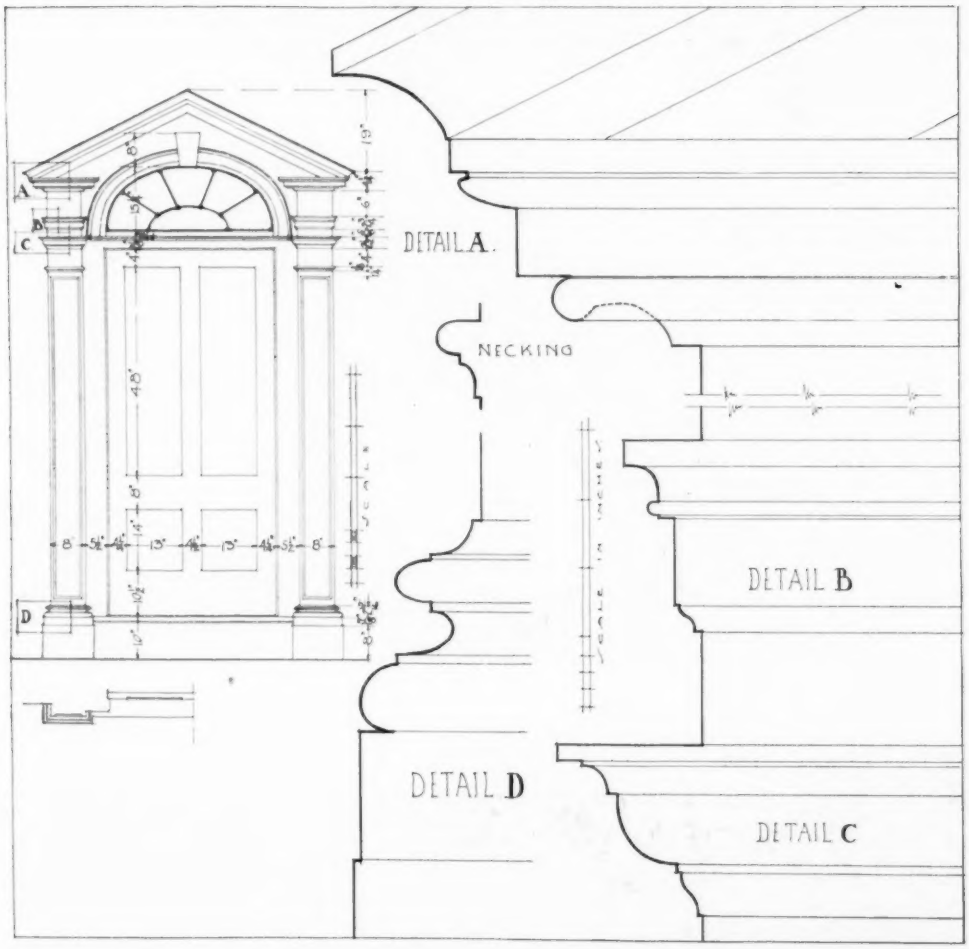
Other motives for Colonial doorways included a complete entablature supported by flat pilasters; or, as in the pediment treatment, disengaged columns; or a hood, as on the Perry House.

The Seymour doorway, at Litchfield, carries with it a great deal of dignity; it is well proportioned, has an attenuated feeling, and the small details are carefully executed. The proportion of the entablature does not follow hard and fast rules of classic proportion, but violates it in a pleasing manner by the width of the fascia and the small architrave members. The pilaster caps likewise are not in accord with historic precedent, but no one will deny that this is an interesting and well designed doorway.

The Butler doorway, at Litchfield, is similar in composition to the Seymour; still it varies enough to give it its own distinction, and here again the rules are violated in the width of the fascia and cornice; the architrave also is of a smaller proportion than is strictly permissible, yet it is pleasing to the eye and, after all, proportion is decided by what pleases the eye. Here the modillions are used as on the pedimented doors; the crowning moulds are a fillet cove and cyma reversa, then the small fascia. The sidelights differ from the customary handling, but they have an individuality of their own worth adopting, with ad-



TYPICAL DOORWAY OF SMALL HOUSE OF THE PERIOD OF THE CLASSIC REVIVAL.

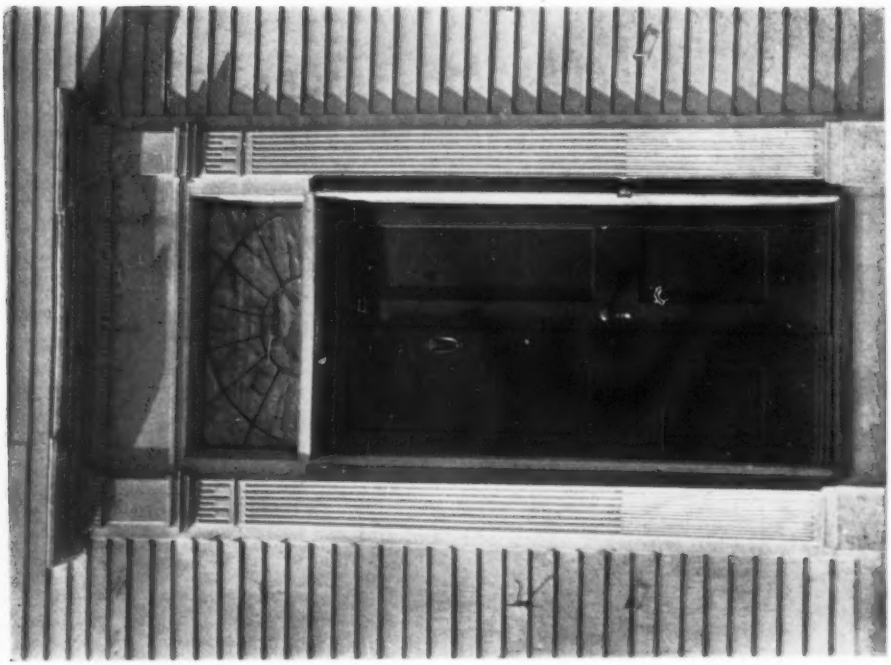


DOORWAY OF THE PRATT HOUSE, ON ROPE WALK, ESSEX, CONN.
Measured and Drawn by Wesley Sherwood Bessell.

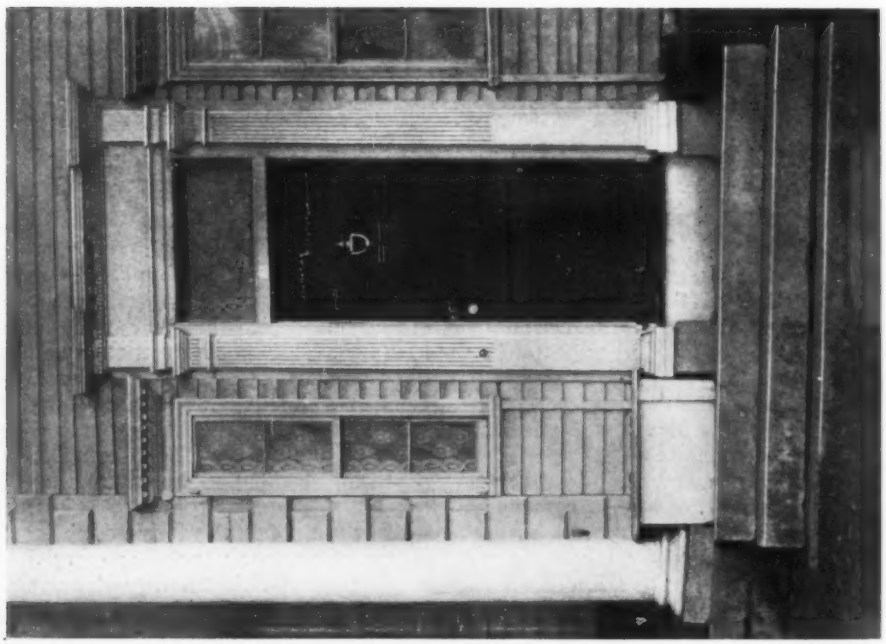
mirable effects possible. Here the designer had the boldness to place the doorway on a corner of the house, which is not at all discordant. A great deal of quaintness is procured very often by placing a doorway in this manner. It need not be the main entrance, but if well placed it will add a homely feeling not at all undesirable.

The door of the Town Hall at Essex is in a wood structure and is somewhat Greek in feeling. It is extremely beautiful, the panelled door itself being carefully thought out and the sill and plinth block being entirely different from any other. Doorways of this character are too seldom used—simple and dignified, but with "quality" in abundance.

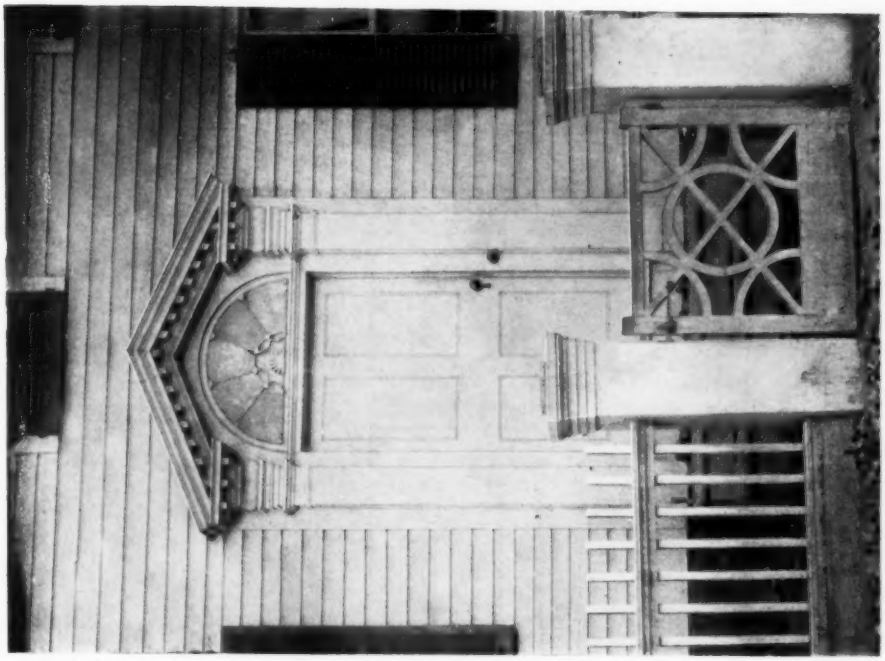
Again, different from both of the preceding ones, is the doorway to the Norton house, at Goshen. Like the house itself, the details are refinement at its best. The fanlight and sidelights, designed with the door as a whole, and the coupled columns between the door and sidelights are tapered and beaded. The entablature contains an interesting bracket treatment, and the motive on the fascia of the entablature of the main hood is exquisite in composition. Still another door to this house is the small side door under the colonnade, showing a plain treatment



DOORWAY OF THE SEYMOUR HOUSE, LITCHFIELD, CONN.

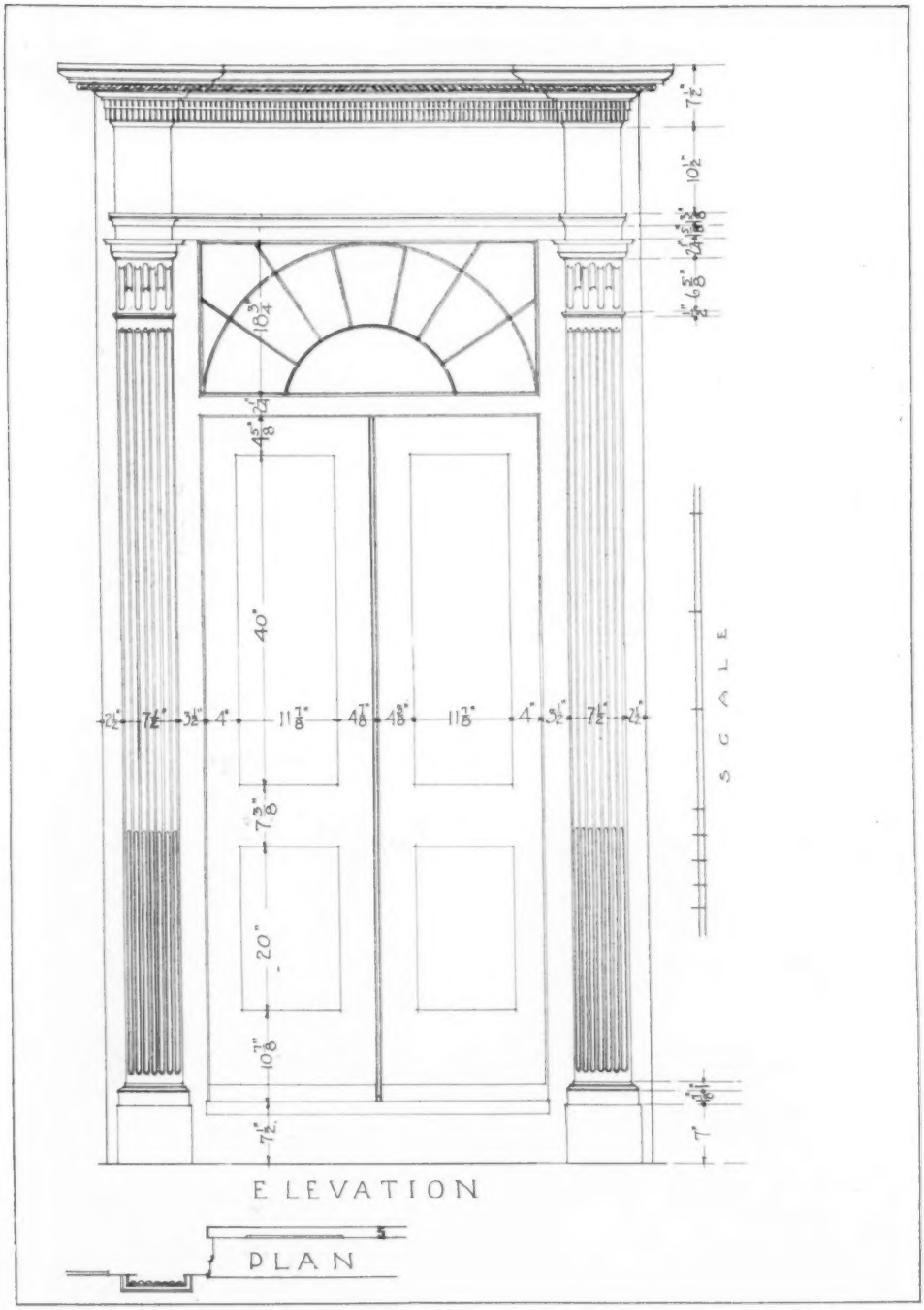


DOORWAY OF THE BUTLER HOUSE, LITCHFIELD, CONN.

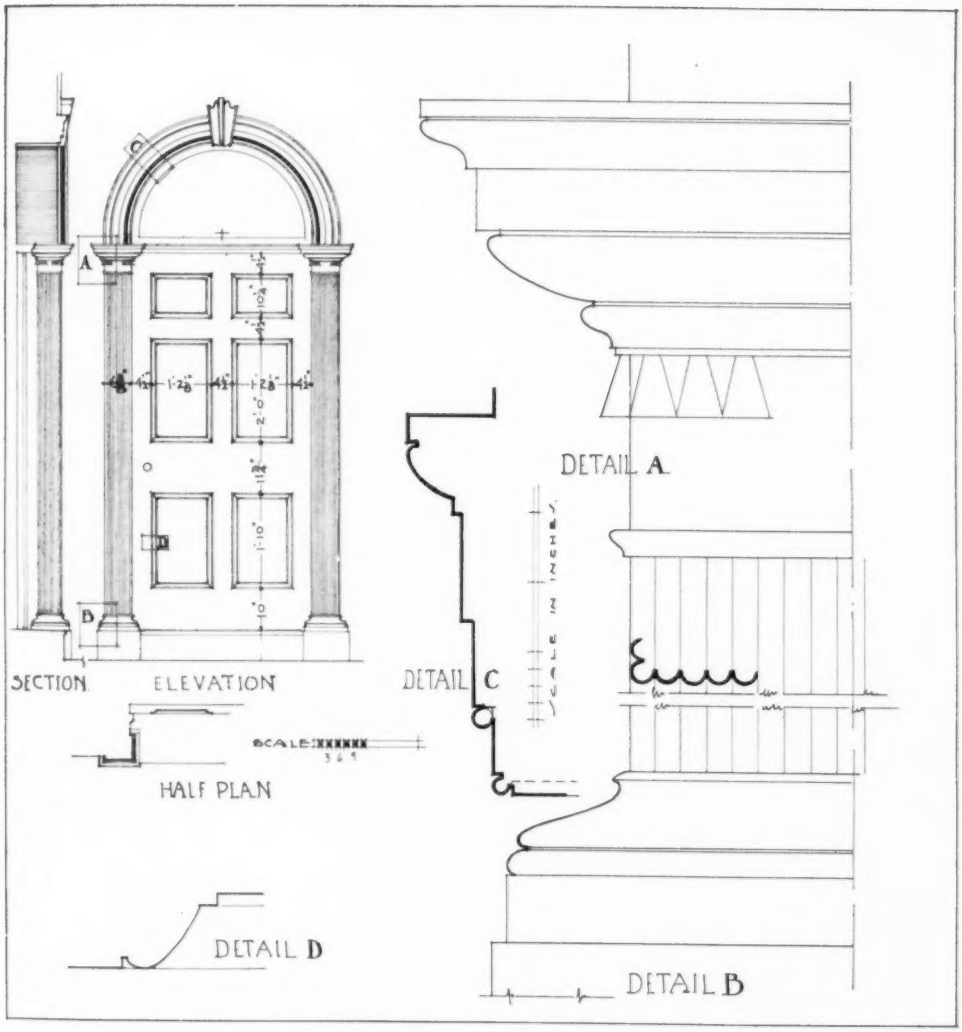


DOORWAY OF THE PRATT HOUSE, ESSEX, CONN.

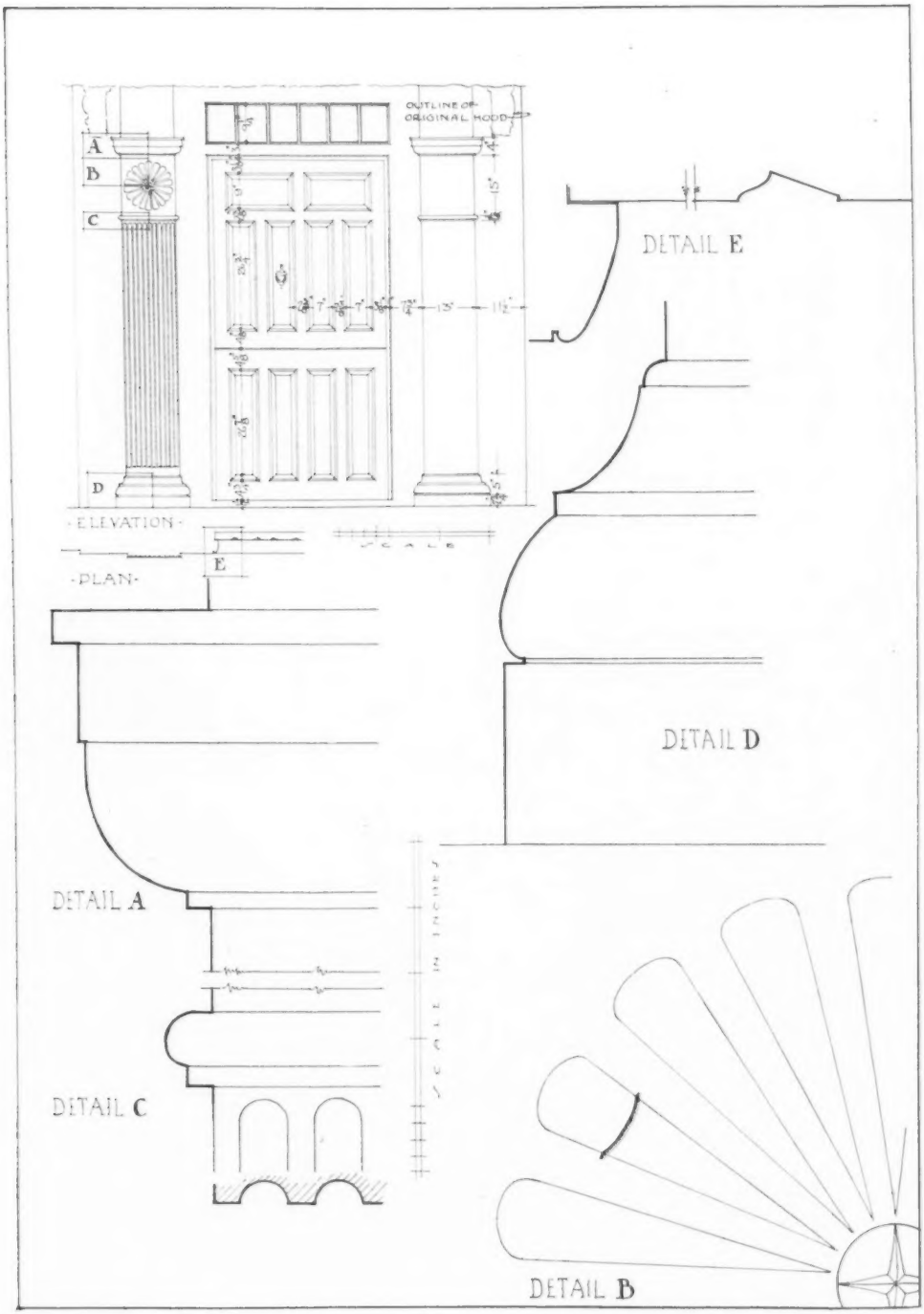
DOORWAY OF A HOUSE AT LITCHFIELD, CONN.



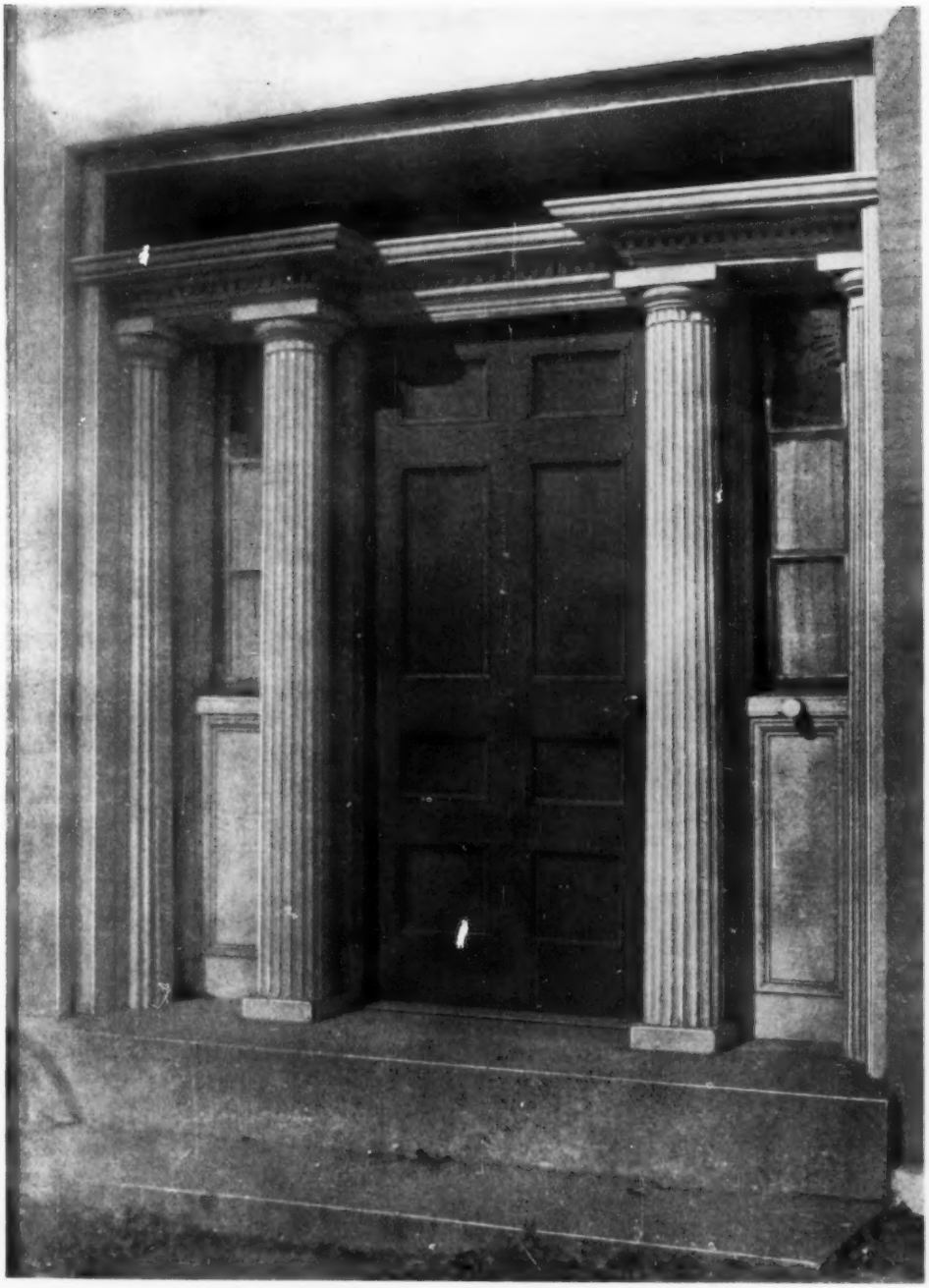
DOORWAY OF THE SEYMOUR HOUSE, LITCHFIELD, CONN. MEASURED AND DRAWN BY WESLEY SHERWOOD BESSELL.



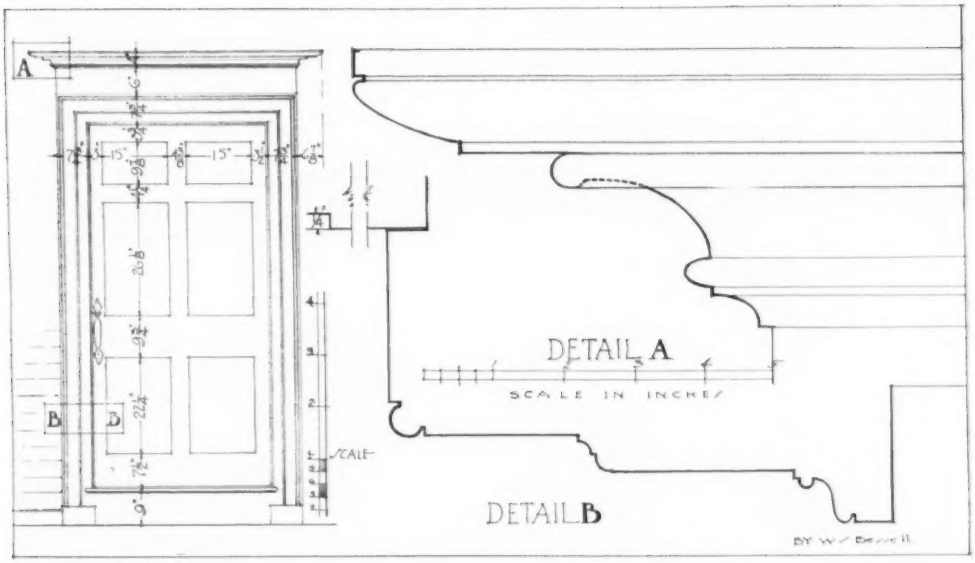
DETAIL OF A CHURCH DOOR AT AVON, CONN. MEASURED AND DRAWN BY WESLEY SHERWOOD BESSELL.



DOORWAY OF THE SILLS HOUSE, SILLSVILLE, CONN. MEASURED AND DRAWN BY WESLEY SHERWOOD BESSELL.



DOORWAY OF THE PORTER HOUSE, SAYBROOK POINT, CONN.



DOORWAY OF THE TOWN HALL AT ESSEX, CONN.

with small fanlight; it is placed off centre of the colonnade, but on centre of the main hall.

The Cowles doorway presents another handling. The peculiar inverted tapered columns are delightful, and could be copied advantageously, not alone in this manner, but with variable treatments. The single header brick arch is a three-point arch and has a high shouldered spring.

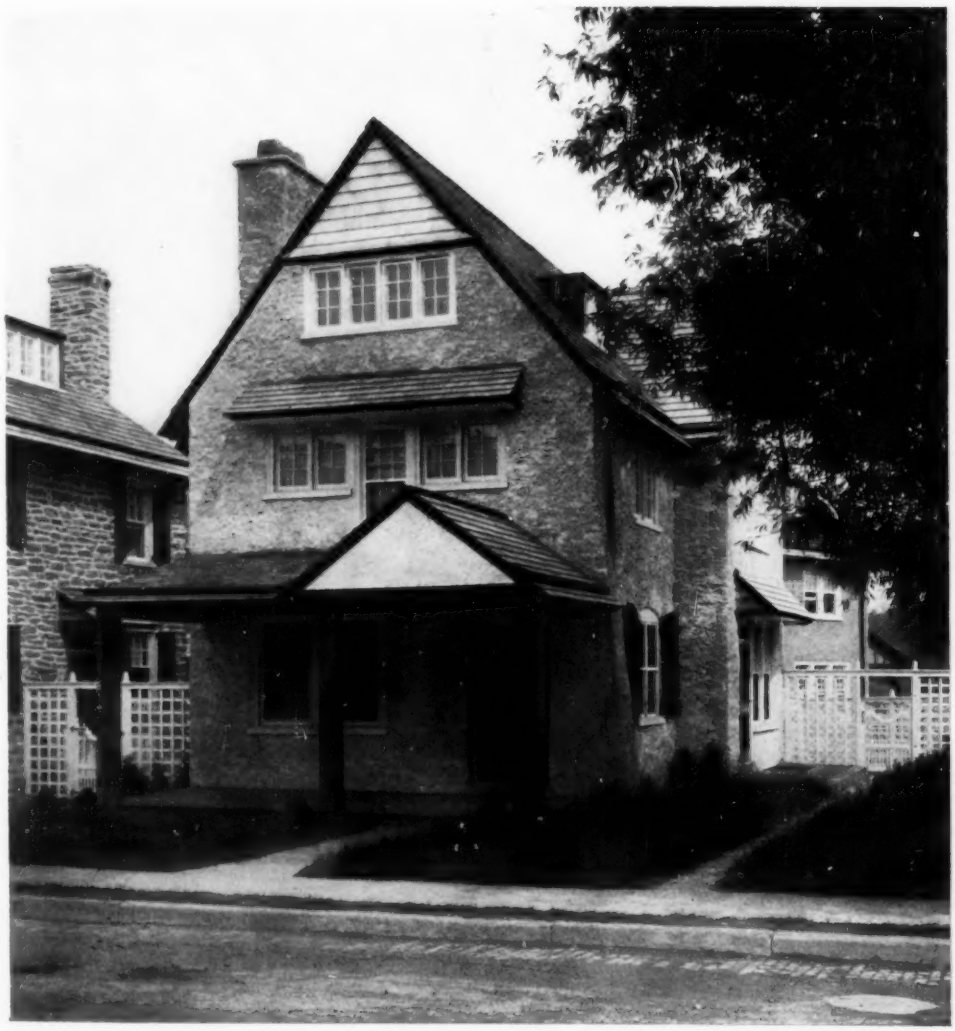
Still another brick-set doorway is the one at Saybrook Point, entirely foreign to the others, and yet Colonial. It is heavier in detail and of a later period. The composition, however, lends itself to far better effects than may be at first realized, and as the others had their individuality, so has this its unlimited opportunities.

The Sills doorway, at Sillsville, is of a design seldom used, and the broad, flat pilaster with channelled rosette was originally under a hood projecting from the house proper. The doors themselves are the original ones and are very good in their panelled composition. The double doors, however, were seldom used on Colonial houses, being of Dutch origin, and were evidently incorporated into this Colonial doorway by a Dutch settler.

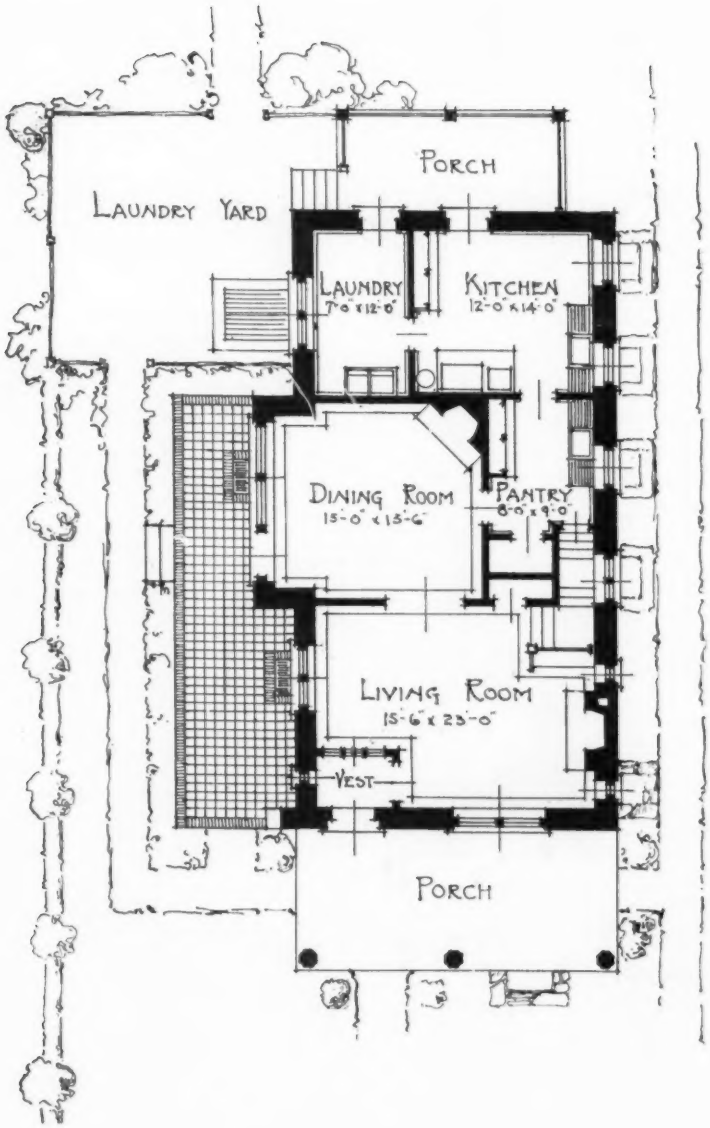
An interesting door is that of the church at Avon, with detail not unlike that of some doors found in New York City. The beaded pilaster and soffit of the arch are charming, and the moulded members of the cap and base have that reaching effect so often adopted by Colonial builders in copies of the classic mouldings.

Our small selection of photographs and details show decided differences in handling. Each doorway is of a type peculiar to itself, yet purely Colonial in feeling. The number of doorway examples procurable from Colonial work would fill pages, while examples of variable designs in buildings would fill but little space. The doorway received the greater detailed attention, making it the color note in the design. The study of ornament was given unstintingly to the doorway, the hospitable Colonial doorway, which leads to the fireside.

PORTFOLIO OF CVRRENT ARCHITECTVRE

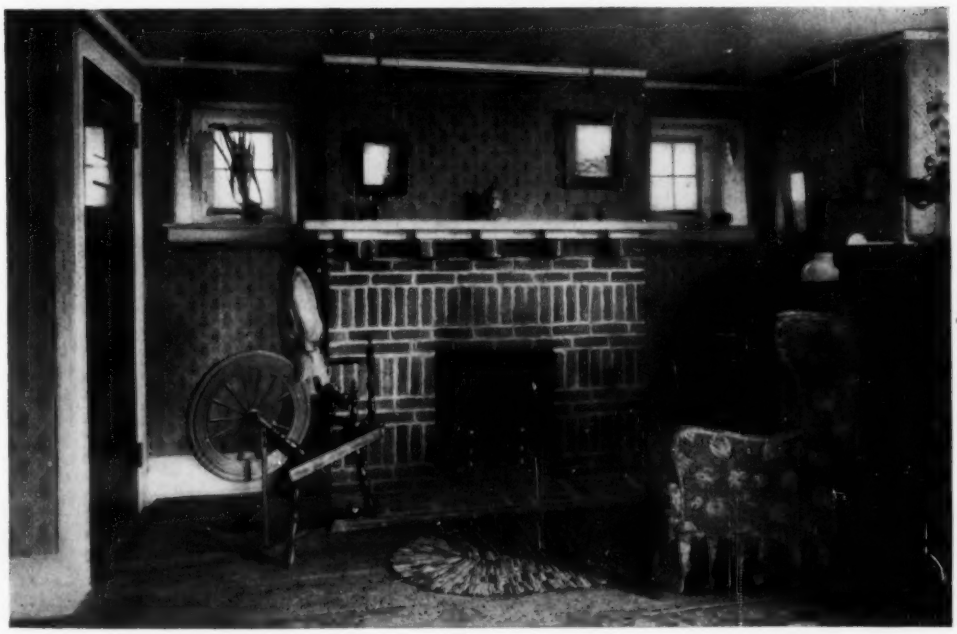


HOUSE AT NO. 20 BENEZET STREET, CHESTNUT HILL, PA. DUHRING, OKIE AND ZIEGLER, ARCHITECTS.

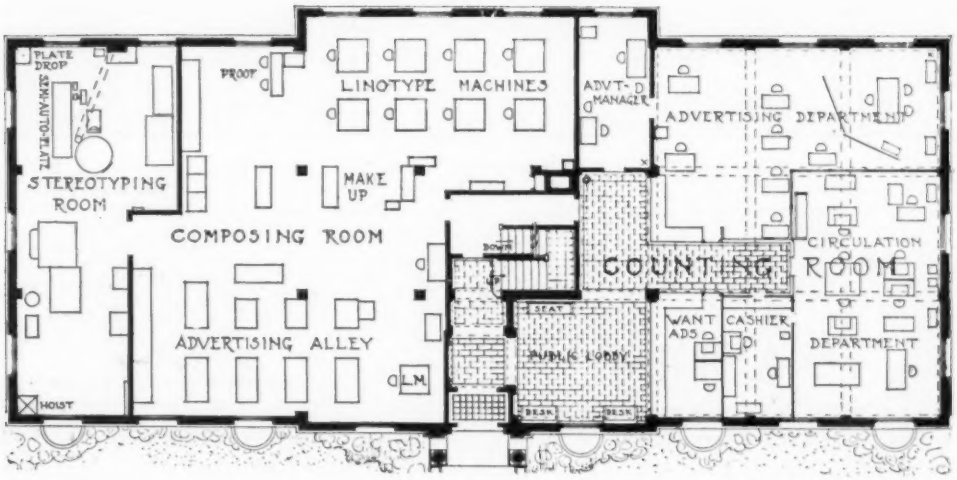


FIRST FLOOR PLAN OF NO. 20 BENEZET STREET, CHESTNUT HILL, PA. DUHRING, OKIE AND ZIEGLER, ARCHITECTS.

LIVING ROOM FIREPLACE, NO. 20 BENEZET STREET, CHESTNUT HILL, PA.
Duhring, Okie and Ziegler, Architects.



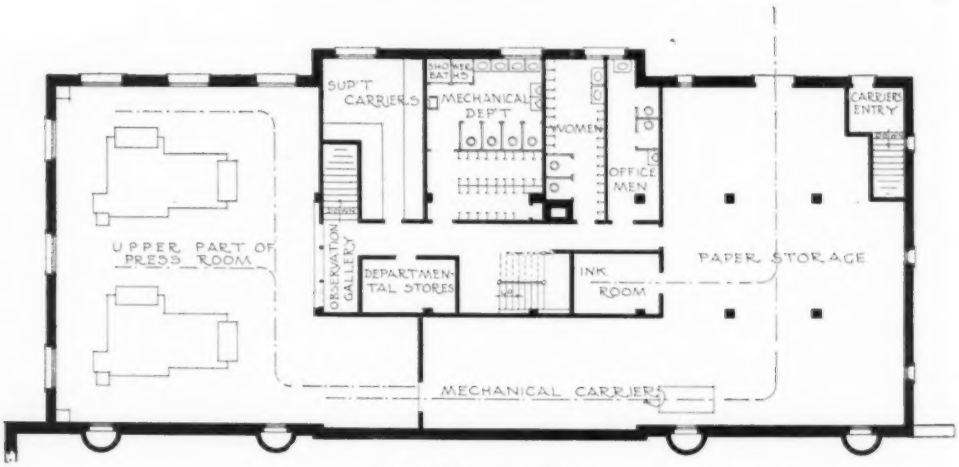
A SECOND FLOOR ROOM AT NO. 20 BENEZET STREET, CHESTNUT HILL, PA.
Duhring, Okie and Ziegler, Architects.



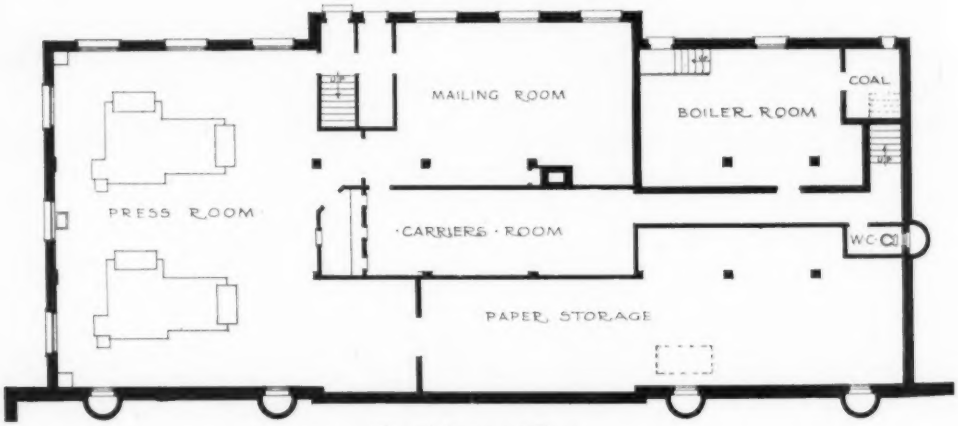
VIEW AND GROUND FLOOR PLAN OF THE NEWS-PRESS BUILDING, ST. JOSEPH, MO. ECKEL & ALDRICH, ARCHITECTS.

DETAIL—THE NEWS-PRESS BUILDING, ST. JOSEPH, MO. ECKEL & ALDRICH, ARCHITECTS.

Plan of Second Floor.

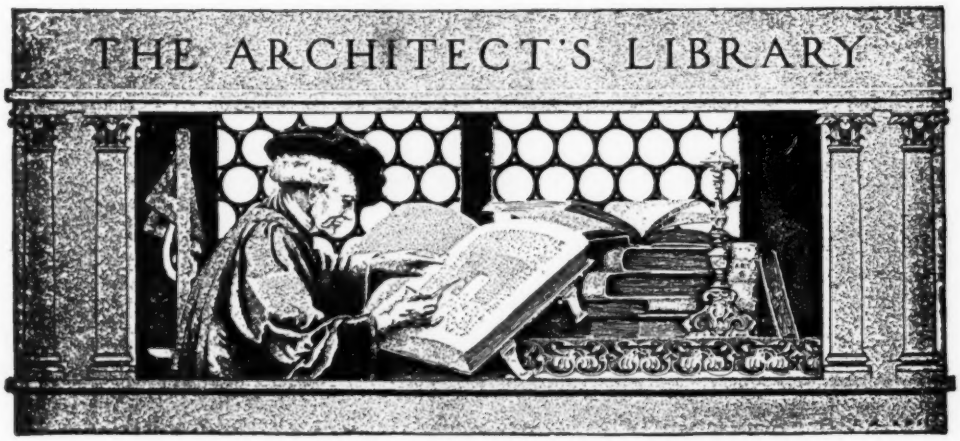


Plan of Mezzanine Floor.



Plan of Basement Floor.

THE NEWS-PRESS BUILDING, ST. JOSEPH, MO.
Eckel & Aldrich, Architects.



BOOKS ON MEDIEVAL ARCHITECTURE

By RICHARD FRANZ BACH

Curator, School of Architecture, Columbia University

PART II.

TO Winston's *Hints on Glass Painting,* published in 1847, and Fowler's praiseworthy *Engravings of Mosaic Pavements and Stained Glass,* published in 1805, is now added a third volume devoted to the glass art in England. It is Philip Nelson's *Ancient Painted Glass in England,* 1170-1500 (George H. Doran Company, New York, and Methuen and Company, London; octavo, pp. xvii-280, 33 plates, $3). This volume is not the effusion of a medieval enthusiast, like that of M. Mâle just reviewed, but rather a detailed chronological study of English glass of the Middle Ages from the late twelfth to the beginning of the sixteenth century. The author has done his work in a painstaking fashion, leaving no stone unturned in his search for all possible material. Fortunately he writes as one personally familiar with all the important glasses mentioned in his text. Mr. Nelson has encountered, as has many another searcher in the rich field of English Gothic art, untold obstacles and causes of unconscious errors in present judgment due on the one hand to destruction and neglect and on the other hand to the benighted efforts of self-styled "restorers," unbridled archæological fanatics of another day, happily past. Two interesting chapters added to the historical sequence on church glass are those on "English Domestic Glass" and on the "Vicissitudes of Ancient Glass." Too little has yet been written on the former of these subjects and, incidentally, on the development of the English heraldic windows, which are among the most interesting features of certain manor houses. More than half of the volume is assigned to pages of "County Lists of Ancient Glass," and endless alphabetical arrangement that leads us to marvel at the great number of windows that have outlived wanton destruction, carelessness and nineteenth century restoration. There is an appendix on this matter of restoration and also a detailed index. Color plates in such a book as this are bound to come amiss, for we have not yet devised a process of reproducing perfectly the effect of color due to transparency by means of polychrome plates in which the effects must be due to reflection. However, this handicap must not be permitted to militate against the general utility of Mr. Nel-

son's book; it will surely prove a valuable architect's handbook of study and travel in England.

Miss Helen Marshall Pratt, author of *The Cathedral Churches of England*, has now published more particular studies on the British national sepulchre under the title *Westminster Abbey; Its Architecture, History and Monuments* (Duffield and Company, New York; 12mo, two volumes, pp. 865, ill.; $4.50). To chronicle the life history of a structure in which the ideals and very existence of a nation for a period of a thousand years have been focused demands untiring study and a hardy pen. Miss Pratt has well acquitted herself of an exacting task. She has been at great pains to work out faithfully the historical and ecclesiologic background which must temper the progress of such a building, and her care in this respect will give an added charm to the Abbey for many a reader, especially for Americans, and will determine in great measure the lasting quality of her book. The volumes are profusely illustrated; there are appendices restating in tabulated form the history of the building itself and its accessory fabric, and giving lists of abbots and deans. There is also an exhaustive index and an exceptionally good bibliography. We can commend this work as one of the class of *Cathedrals and Cloisters of Northern France*, reviewed elsewhere, not excessively technical, nor deeply archæological, nor in any sense controversial; it is simply historical and all architectural uncertainty is left for more professional but less readable publications. The Abbey has not often had so careful a historian.

In *The English Parish Church; An Account of the Chief Building Types and of Their Materials During Nine Centuries* (Charles Scribner's Sons, New York, and B. T. Batsford, London; octavo, pp. xix-338, ill.; $3), Mr. J. Charles Cox has given us an altogether useful volume upon a subject not generally granted its due importance in English architectural history. Mr. Francis Bond, in *English Church Architecture*, has also expanded upon the merits of the English parish church, but Mr. Cox has at last brought together in a separate treatise the whole study of plan, style and materials in buildings of this type, so that it may once more assume its proper place as a determining phase of English medieval art.

To begin with, "the parish, with its church and priest, was an arrangement specially devised to meet the needs of the country rather than the city," and was developed directly from the early practice of attaching chaplains to lordly manors. The growing power of the church soon detached the chaplain, who served the retainers as well as the lords, from the manor house and placed him in charge of his own church edifice, which duly became the religious center for a more or less loosely defined district. The district may at times have included several manors, and its presiding priest was of the secular as distinguished from the monastic or regular clergy.

The parish church was the most democratic factor in English feudal life; at parish meetings lord and tenant, villein and serf met on equal footing. Furthermore the church building was erected in close proximity to any public buildings of which the community might boast and in towns the houses of the citizens clustered closely about it. In times of danger from fire, riot, robbery or conquest public and personal treasures were stored in the church, while deeds and other valuable writings were placed in the parish chest for safe keeping. Contracts were signed in the church porch; agreements concerning the parish at large were sworn to on the altar itself. The church porch was also the scene of the coroner's inquest in cases of violent death in the parish. To these many public uses should also be added that of sheltering fugitives at a time when capital punishment was meted out to the smallest offender.

For many years students endeavored to read the significance of the parish church in arcades, windows, mouldings and the like; while the real life of buildings of this type, as Mr. Cox points out, is to be sought in plan development. The plan was divided, as a general rule, into nave and sanctuary, although numerous

examples occur in which an intermediate chancel appears. There are also many larger parish churches, especially those in city centres, whose plans show nave, transepts, sanctuary and lantern tower. Each of these types has its variants; hybrid plans, accomplished by bringing together parts of the three types or their variants, or by differing dispositions of towers or of chapels, contribute an infinite variety which is at first confusing. Mention should also be made of a possible fourth type, the circular churches, such as St. Sepulchre's, Northampton. Of these there are but four extant. Good illustrations of the other fundamental types are easily found. The simple nave and chancel plan appears at Chithurst, Sussex, or at Little Braxted, Essex, the first square ended and the latter with apsidal eastern termination. Such examples date chiefly from the twelfth century, as do likewise those of the second type. This has a triple plan division, e.g., nave, chancel, sanctuary, and is well shown at Kilpeck, Herefordshire, or, with chancel and sanctuary combined and a tower replacing the former, at Stewkley, Buckinghamshire. The third type leads us at once into the history of the transept—placed properly in Byzantine and Early Christian Europe—and its variations are too many to be adequately substantiated by less than a round dozen of illustrations; fairly typical are Witney in Oxfordshire, Uffington in Berkshire, or Old Basing in Hampshire.

Having thus set forth the various type forms of plan which characterize the English parish church, and having shown how the simplest of these types may develop into the most complex in the course of its life history, Mr. Cox undertakes to explain in the same systematic fashion the evolution of aisles, clearstories and chapels. Other sections of the excellent chapter on plan are assigned to studies of the cross plan, the tower, the porch, vestry and ambulatory.

A long chapter is next devoted to "Architectural styles in the English parish church." Mr. Cox recognizes seven steps in stylistic growth: 1, Saxon; 2. Norman; 3. Transitional; 4. Early English; 5. Geometrical; 6. Decorated; 7. Perpendicular. This classification carries his study from the Romano-British church excavated at Silchester in 1892, a truly pre-Saxon structure, as well as Brixworth and Earl's Barton Tower at one end, to the fine examples at Grantham, Lincolnshire, at Stratford-on-Avon, and that of Saint Nicholas, King's Lynn at the other, and covers the whole development of vaulting, tracery and carved ornament.

The chapter on building materials is of great value. This side of the question of medieval work has received the minimum of attention in the past; and Mr. Cox's findings in this direction furnish an important contribution toward the revived study of the parish church. Stone, flint, brick and plaster are considered in detail, with their many and varied illustrations, while the section on wood as a structural material is enlivened by interesting discussions concerning doors and timber roofs.

This volume is without doubt the best presentation that the English parish church has yet enjoyed. It maintains the excellent quality of Mr. Cox's earlier book on *English Church Furniture*,—to which he devotes but little attention in the volume under discussion,—as well as the recognized standard of the Scribner-Batsford publications. There are over two hundred and seventy illustrations, a register of churches by counties and an excellent index; the volume lacks only a bibliography, which, in the first separate and complete treatment of the subject, would have been particularly in place.

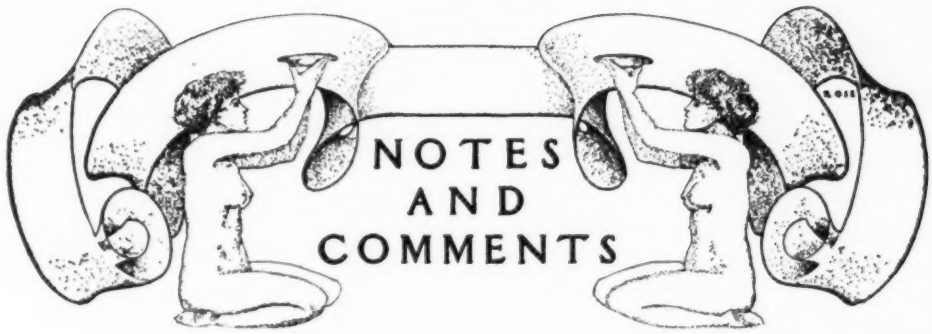
Certain architectural books of definitely assured quality defy the accumulation of fresh archæological data. Such was Gaston Maspero's *Manual of Egyptian Archaeology*, recently republished by Putnam's, and another such is George Edmund Street's *Some Account of Gothic Architecture in Spain*. Works of this category may be reissued and re-edited, but to gather the material afresh for a new book in fields thus already covered would be gratuitous labor. Street's book is now issued in two volumes under the editorship of Georgiana Goddard King (E. P. Dutton, New York, and J. M. Dent & Sons, London; 12mo, pp. 356 and 352, ill.; $2). Fortunately the text has been held inviolate unless it was nec-

essary to bring it to date; and, we venture to say, wisely, the scope of the book has been considerably widened and its value heightened by Miss King's grasp and understanding of the subject as well as of her author. The additions to the text are not many, for, says the editor, Street was very thorough and Spain is very slow. What is more, the clearness of Street's vision has given a permanence to the truths that he saw in the stones which later critics and writers can only echo. The original illustrations from Street's sketches have been retained and the editor's notes have been set apart at the end of each chapter. We might counsel a similiar good judgment for all prospective editors of recognized works, for a careless or unscrupulous editor is poor sauce to good meat. The present editor has gone about her work in an efficient manner and her additions are made with a briskness that characterizes the handbook; Street never meant his *Account* to be anything else but a handbook. "Baedeker is for the best part carved out of Street" and Street must be made to fill the gaps in the modern guide. The format of the new edition, which is slight and easily handled, renders it eminently useful for this purpose, although it has fallen into the usual evil of small crowded type which makes the notes, at least, troublesome reading. We should also have appreciated a few modern photographic illustrations. But these defects are readily overlooked. We are glad to welcome this and other editions of Street, as we should new editions of Piranesi or of DuCerceau; students need them and architectural books of quality are too few in this country.

A Guide to Gothic Architecture by Mr. T. Francis Bumpus (Dodd, Mead and Company, New York; octavo, pp. xii-359, ill.; $3), leads us to expect in its title a terse general text book. Instead, the author devotes three hundred pages to the history of English architecture, already adequately treated by Francis Bond and others, and recalling somewhat his *Cathedrals of England;* while only fifty pages remain for a short summary account of the style elswhere. Although there are over one hundred and forty illustrations, these are indistinct and of small scale; while only a very few poorly drawn plans appear. The text is well written, however, and set in large type. There is also a glossary of architectural terms and a brief index.

Mr. William Gorham Rice sounds a fresh and attractive theme in his *Carillons of Belgium and Holland; Tower Music in the Low Countries* (John Lane Company, New York and London; octavo, pp. 232, ill.; $1.50). It is remarkable that a subject of such interest and historic value should so long have escaped the writers, especially since Mr. Rice records nearly sixty carillons in Holland and about fifty in Belgium. The author explains at length the mechanism, method of ringing and history of the bells and of the quaint traditional occupation of carilloneur, which, like that of bell founder, is an honorable family occupation handed on through succeeding generations. Extensive appendices contain lists of carillons in the Low Countries and elsewhere in Europe, as well as in the United States.

A new book on the *Lombard Towns of Italy, or The Cities of Ancient Lombardy* (Dodd, Mead and Company, New York; 12mo, pp. xvii-590, ill.; $1.75), completes Mr. Egerton R. Williams' trilogy of volumes on Italian cities of which the others bear the titles *The Hill Towns of Italy* and *The Plain Towns of Italy*, dealing respectively with the less known cities of the Apennines and the region north of Rome, and of Venetia. Mr. Williams has set out to write a guide book and has succeeded admirably. He has also adopted the guide book size for his work and in this respect the present volume is an improvement upon its predecessors. There is a good map of Lombardy and a thorough index. Books of this kind are to be recommended for the use of the architect, for they offer whenever required the necessary jog to the memory that would entail much searching in a larger work. They offer also in a concise form the historic features of a given structure, names of architects and dates, which are invariably buried in controversy in the more directly architectural publications.



A Water Color Sketch in Terra Cotta.

The little building of the Edison shops on Fifth Avenue, just below Forty-first Street, has all the freshness and sparkle of a water color sketch. It is full of interest and the personality of its authors. But one cannot help feeling that the detail of the top story and the cornice do not seem to be altogether in harmony with that of the lower stories. One wonders whether they were not detailed on different sheets and not seen together until the whole was in place. The modelling of the terra cotta in flat relief, the texture of the terra cotta, and the use of gold in connection with this material are all of great interest.

England's Imminent Italian Revival.

An English contemporary confides to us its suspicion that there may be some truth in the rumor of another Italian revival in England. A glorious age, this, when one may proclaim a revival; when we may run the gamut of the architectural records of the past, and deck out a tradition in modern materials without a hint of modern interpretation. We may yet have a stylistic arbiter, who shall dictate the progress of the orderly repetition of dead forms, a sort of Paul Poiret of stone and steel. Says the Architects' and Builders' Journal: "The spirit is yet but moving on the face of the waters. But soon the new thing will be made manifest, and perchance we shall be harking back once more to Letarouilly . . ." Indeed, so long as we add so little of the personality of our time to the types we find in past styles, we might as well hark back to Churriguera. Perhaps after we have gone the rounds of reviving once more we shall have had time to devote to an architectural twentieth century. In this country, at least, we have the greatest opportunity, and, what is more, we have a saving eclecticism of taste to fall back upon.

A Venial Professional Transgression.

Two major causes have at last been fixed upon for the present weakened condition of old St. Paul's, London. The piers are in critical state because Wren determined to use softer stone in place of the specified Portland stone, which required much time in transit under contemporary conditions. What is more, the great chain which binds the stone work at the base of the dome has been found to be rusting. Mr. Marvyn Macartney has in an official capacity investigated these weaknesses, which have been the cause of a growing uneasiness in London, and the burden of his report seems to show, between the lines, that Wren was actuated by the most human desire that ever moved an architect to commit a professional sin. He wanted to see his masterwork completed within his lifetime. No doubt he valued it even higher than his projected scheme for laying out London anew after the memorable devastation of 1666. For the long years from 1675 to 1710 he worked upon this building with unflagging devotion, feeling no doubt from the outset that it was destined to be the focus of the English Renaissance in church building; and at the end the greatest pleasure that could come to a man engaged upon great work was vouchsafed him. The Underground was not within his ken and the pleasure of posterity in his building evidently clashed in his mind with his personal wish to witness

the dedication of a completed St. Paul's. The artist's dream sought its realization and succeeded. Nor should we impugn his morals, for he was impelled by the most praiseworthy of professional weaknesses.

The Arch of Constantine.

The secret of the Arch of Constantine has at last been explained. Professor Arthur L Frothingham, an indefatigable student of Roman archaeology, with the assistance of the Italian government, in the person of Commendatore Corrado Ricci, has made an extensive examination of the structure. The investigation included a detailed study of the reliefs on the arch at close range and, as far as possible, of the masonry. Basing his conclusions chiefly upon an intimate and comprehensive understanding of Roman sculpture, Professor Frothingham has published in the American Journal of Archaeology a series of papers demonstrating that the old theory of a reconstruction of one of the Trajan arches, either that in the Via Appia or that in the Forum of Trajan, is untenable. The arch in question was dedicated to Constantine in 313, but this could not have been an original dedication, since such arches were voted only in connection with a triumph, which in terms of Roman law was passed upon by the Senate and connoted the conquest of a foreign foe. Constantine had waged no war of foreign conquest, and his greatest military exploit was that which culminated in the defeat of Maxentius at the Milvian Bridge. It was there, incidentally, that his conversion to the Christian faith took tangible form, for it was under the *labarum*, bearing the emblem of Christianity that his soldiers achieved the victory.

But if the arch was not primarily dedicated to Constantine the Great, what previous occasion had caused it to be built? The solution is that in the case of Constantine we deal with a rededication, and that therefore the arch was erected for an earlier emperor. But arches were justified only by the pleasure of the Senate of the Imperial City; and their destruction depended also upon that pleasure. An arch or other memorial might remain standing for all time as a record of the glory of a ruler, but if the surfeit of his victories developed in him the germ of tyranny, the Senate could cause his monuments to be cast down and his effigy to be mutilated. This was authorized by that governing body in the form of the *memoriae damnatio*, a decree which implied the wanton destruction of all memorials of the tyrant and the defacing of his images; the structures so treated also became no man's property, and stood uncared for as an index of popular disfavor.

The investigator's study of the reliefs and of the technique of their carving led him to ascribe the construction of the arch to the time of Domitian, who was emperor from 81 to 96 A. D., over two hundred years before the reign of Constantine. This emperor had made conquests in the east and in his case also the Senate had voted that the infamous name be erased from the monuments. Among the monuments to suffer from the denunciation and consequent mutilation was the present arch, which stood thereafter for many years unclaimed. Reliefs of the intervening period show it in position, and the carvings in the arch itself are assuredly of the earlier time, harking back to Greek suggestions or actual workmanship. The inscriptions, the heads of Domitian, as well as other injured parts were in all cases carved new and certain medallions added. The mode of insertion of these medallions betrays their later provenience, since the regular practice of Roman construction is not adhered to, as would be imperative in the case of a single uniform structure. These alterations were made in the time of Constantine; for when it was found desirable to honor him for his final overthrow of all six rivals for the imperial throne, the iron-bound rule of Roman law precluded the erection of a new arch of triumph. Therefore the expedient was hit upon of rededicating the old Domitianic arch, and a historic example was thus provided of obedience to the letter of the law.

R. F. B.

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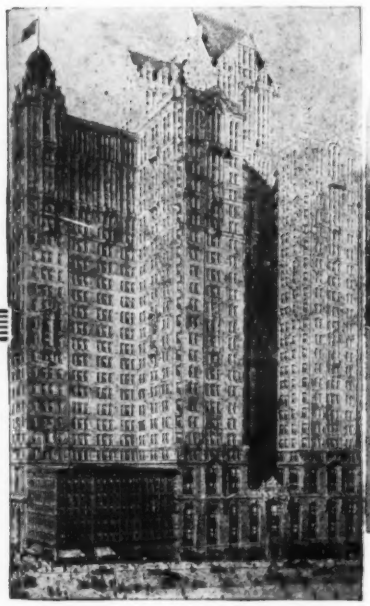

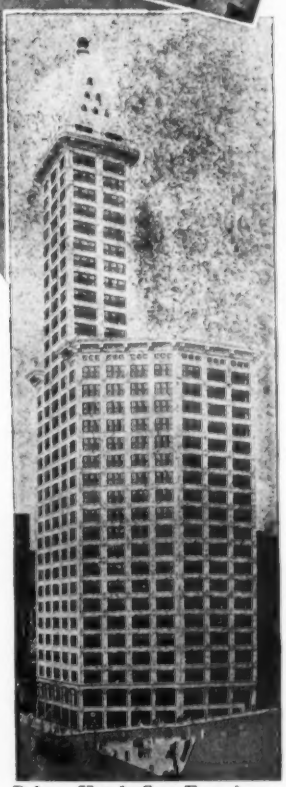

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New York City

Palace Hotel, San Francisco, Calif.
L. C. Smith Bldg.,
Seattle, Wash.

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TRADE MARK

Systems of Heating—Ventilating, Cooling and Purifying

will be found operating quietly and efficiently in many of the largest and most prominent buildings throughout the country—Architects specify "Sirocco" **not** because "Sirocco" is cheap, but because the **small space requirements—low power consumption** and **low maintenance charges** fit them so completely to building work.

A handsome bulletin recently issued will be mailed to your address upon request. It is standard size and the number 2501.

Sirocco
AMERICAN BLOWER COMPANY

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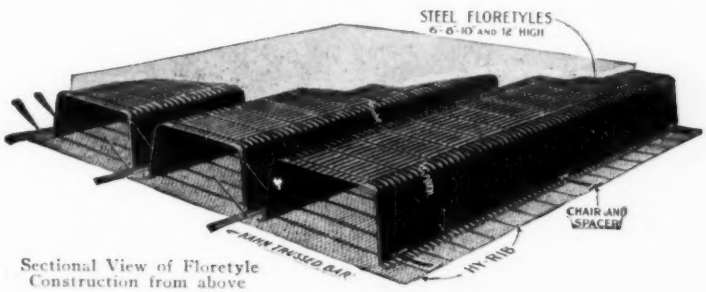

Sectional View of Floretyle Construction from above

Steel Floretyle Construction

This improved Reinforced Concrete consists of rows of specially manufactured hollow steel tile covered with a layer of concrete and separated by reinforced concrete joists. The Hy-Rib ceiling extends continuously underneath.

Steel Floretyles are of special design and manufactured under powerful presses, with deep stiffening ribs across the top, corrugated sides and special rounded corners. Recent improvements consist of corrugated flanges at lower edge and spacer chairs assuring increased rigidity, absolute accuracy and great economy.

Floretyle construction insures: (1) Flat ceilings of long span, (2) Greatest saving in dead weight, (3) Wide spacing of joists, 24½" (4) Greatly simplified centering, (5) Exceptional strength, (6) Soundproof construction, (7) No discoloration of plaster, (8) Great speed of construction, (9) No breakage or loss of concrete, (10) Greatest economy in material and labor. Extensively used in important constructions of all types of buildings.

FREE interesting pamphlet on Floretyle Construction—Write today.

KAHN Building Products — TRUSSED CONCRETE STEEL CO.

Dept. R-67 **YOUNGSTOWN, OHIO**

Representatives in Principal Cities.

KAHN Building Products

Floretyle Construction at Couzens Building, Detroit, Mich. Note true lines of joists and the great rigidity of Floretyles.

Good Samaritan Hospital, Portland, Oregon

Evergreen Apartments, Washington Boulevard and 48th Street, Chicago

Country Estate, Westchester County, New York

KEWANEE
Garbage Burners

Make Fuel of Garbage in these Buildings

Childs Restaurant, 23 and 25 Park Row, New York City

Sanitary engineers have stated that a ton of garbage contains as much heat as 200 pounds of coal—often more. And in a Kewanee Water Heating Garbage Burner garbage and refuse are used as part of the fuel necessary for heating hot water.

Furthermore, the only really sanitary way of disposing of garbage is to burn it on the premises where it originates, before it has a chance to decay and breed and feed flies, rats and other disease-carrying insects and vermin.

Therefore a Kewanee Water Heating Garbage Burner performs two functions. It provides hot water at minimum cost—because it uses garbage and rubbish as fuel. And it eliminates the garbage problem by burning garbage, without odor, while it is still fresh and green.

Lewis & Conger Building, 6th Ave. and 45th St., New York City

Burns Garbage Without Odor

Garbage is thrown into the upper garbage chamber and a small coal fire started on the lower grates. In a very short time the garbage dries and burns without odor.

Notice the by-pass (a patented feature of the Kewanee) which allows the flames to circulate around the garbage. This prevents the damp garbage from smothering the fire and insures the garbage being completely burned without odor.

The water jacket surrounding the burner, and the water tube garbage grates ensure the heating of an abundance of water.

If you own, or are interested in an apartment building, hotel, restaurant, hospital, etc., you cannot afford to have your garbage hauled away. Let us send you some literature describing this device. Any competent steamfitter can install it, in any building, old or new.

The Rexford Apartments, Broadway, 78th to 79th Streets, New York City

KEWANEE BOILER COMPANY

KEWANEE, ILLINOIS

Steel Heating Boilers, Radiators, Tanks, Water Heating Garbage Burners

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Investment Advantages

Maximum Light and Air

Increased and Improved Output

Protection Against Fire and Weather

Low Cost of Installation and Maintenance

Simplicity of Operation

Reduced Lighting Bills

Daylight—
in the fullest degree—
as long as the day lasts!
Steel Sash so strong that it may run the height of the building—
literally walls of daylight, with air where you want it—in any desired amount from any angle!

More work, from healthier workers. Efficiency multiplied and dollars saved in *bettered* production and reduced accidents and mistakes.

Walls of steel that are wind and storm-proof. Construction water-tight. Insurance rates lower because of fire-protection. Ask about the Fenestrated factory that stopped the flames in the Dayton disaster.

Fenestra
SOLID STEEL WINDOWS
"REG. U.S. PAT. OFF."

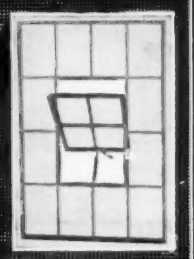
By using our standard types—and they come in wide variety—Fenestra costs no more than good wood sash. And the low maintenance cost makes them cheaper in the end.

Fenestra Ventilators are operated by a spring catch and chain or a notched stay and cam latch. They can be opened to almost any angle, are automatically weather-tight when closed and weather-protecting when open.

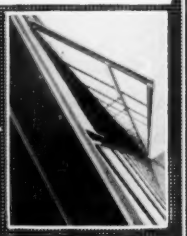
With Fenestra installation daylight is available long after wooden windows require the use of artificial light. This is a big saving on lighting bills—to say nothing of convenience and eye-comfort.

Think over all these advantages and write us for catalog. Let us send, also, Price List to give you an approximate idea of cost.

Detroit Steel Products Company
Dept. 66
Detroit, Mich.

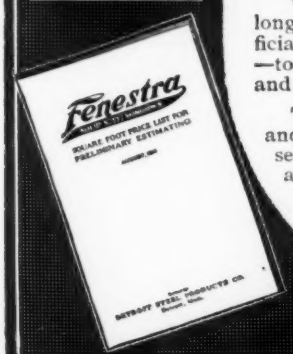


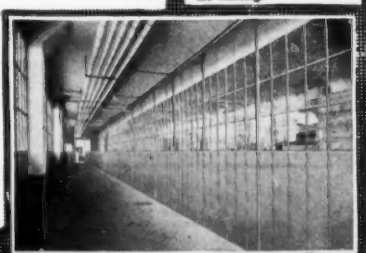
Standard FENESTRA horizontally pivoted. Ventilator operated by automatic gravity cam latch and stay operator, equipped with external adjustable butt.



Top-Hung Monitor Sash for saw-tooth roofs and in vertical planes. Weather-tight when closed; weather-protecting when open.

Vertically pivoted to give maximum ventilation. May be swung on an arc of 180 degrees, or set at any angle to deflect air currents into the building.





Fenestra Steel Partitions afford maximum daylight and fire-protection. Save floor space. Strong, attractive.

Height, 30 ins. Weight, 170 lbs.

Glazed
Garden Pottery

Five
distinctive colors

Catalog on request

Atlantic
Terra Cotta Company

1170 Broadway, New York

Height, 22 ins. Weight, 200 lbs.

The Dibert Mausoleum
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Designed by

Albert Weiblen Marble & Granite Works

Bronze Doors, Urns, Grille, Ornament in Pediment, etc., made by

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"American Art in Bronze and Iron"

The No. 7 issue of our magazine, "American Art in Bronze and Iron," is devoted entirely to showing Mausoleums, the bronze doors, fittings, etc., for which were made by this company. Sent free to practising Architects on request.

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OF THE

DAHLSTROM METALLIC DOOR COMPANY

ARE NOW LOCATED ON THE FIFTH FLOOR
OF THE NEW OFFICE BUILDING OF THE

CONSOLIDATED GAS COMPANY

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THE show rooms are not confined to a suite of offices but embrace the entire building (twenty stories and basement) which is equipped throughout with the Dahlstrom Products, consisting of Hollow Metal Doors, Partitions, Borrowed Lights, Electric Panel Box Fronts, Interior Window Trim, Hand and Counter Railings, Base, Picture, and Wire Mouldings, Jambs, Casings and other Trim, etc.

This installation has been pronounced by experts as being "The finest and best hollow metal job in the world."

A cordial invitation is extended to all interested to visit and inspect our new quarters, where practically every conceivable type of interior trim can be seen in actual service.

DAHLSTROM METALLIC DOOR CO.

Executive Offices and Factories: 61 Blackstone Avenue, Jamestown, N. Y.

BRANCHES IN ALL THE PRINCIPAL CITIES

Pump Talk

Wm. Hatmaker, Editor

DAYTON, OHIO, JUNE, 1915 OPENING NUMBER

Some Waste!

Dave Gibson tells of a Chicago architect, with a bent for statistics, who estimates that he waste-baskets about $5,000 worth of circulars, samples and souvenirs every year.

One architect $5,000. Five thousand architects $25,000,000 a year—Some waste! Also some annoyance, we should say.

These figures seem a little high but our architect friends have been telling us, confidentially, that they are the most thoroughly circularized men on earth and nine-tenths of the big, beautiful, illustrated folders that the mail man drags in go right through to the waste basket without even having the clip taken off, simply because they haven't the time to read them.

Hence "Pump Talk" —successor—so far as we're concerned, to all the foregoing.

Once a month on page nine of Architectural Record "Pump Talk" will give the pre-digested—condensed news of the improvements in Dayton Water Systems.

Pump Talk's Job

For quite a while we've been "cordially inviting" architects to avail themselves of the experience of our service department. Some have and some haven't.

Those that have seem to think that the advice and suggestions they get are worth while.

So "Pump Talk's" big job is to get the rest of you men to feel so real well acquainted with us that whenever you run into a water supply problem, you'll fire us the general specifications and let the service department worry out the answer.

Just occasionally "Pump Talk" in its enthusiasm is likely to put in a real hard plug for one of the members of the Dayton Water System Family — and while we are on the subject we might just mention this new ***System 905*** illustrated here and described on page 13 of the new architects' edition of "Water Supply."

905 is *the* system if electric current is available. Note its compact and convenient arrangement; complete with proper valves and gauges to insure satisfactory service. The motor is mounted above the pump, safe from contact with damp walls and sweating pipes. There is an automatic switch that keeps the water at the desired pressure. The cost of operation will average about 25c per month. The capacity of the pump is 275 gallons per hour. With a 220 or 315 gallon pressure tank, it provides plenty of water for sprinkling and house supply for the average suburban home.

It is so quiet that you don't notice when it runs and when it rests. This fact speaks well for its mechanical precision.

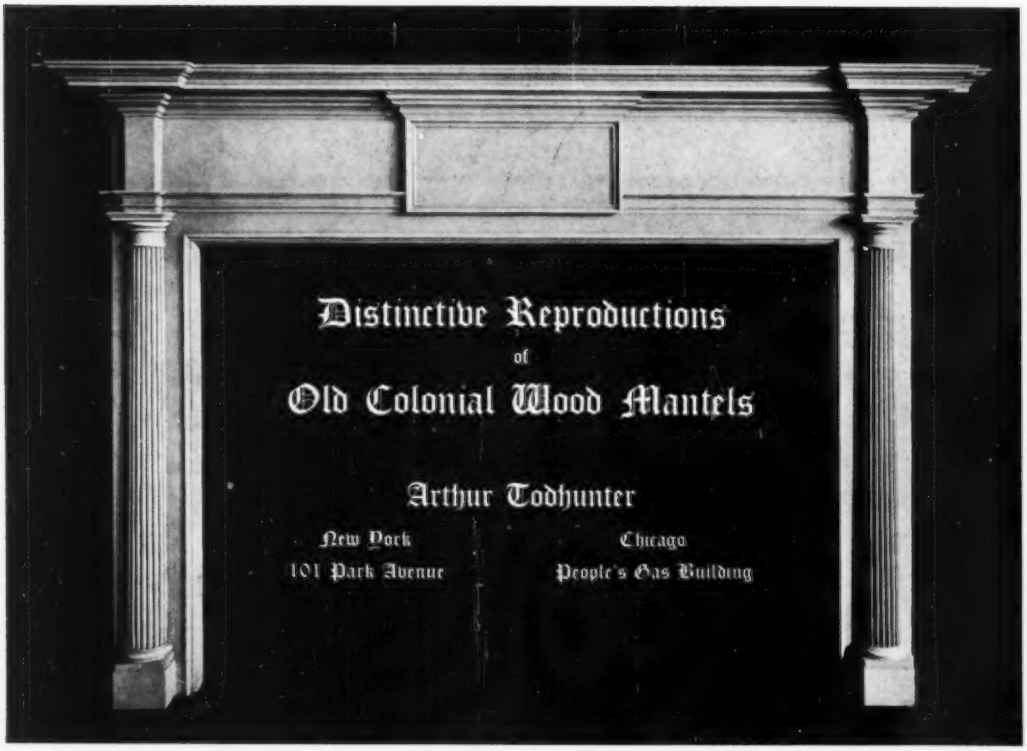
Really a Dayton Water System will do a whole lot in making your clients appreciate the beauties of their homes.

By the way, have you a question about any water system that our service department might answer?

We'll be glad to send you a copy of the architect's edition of our catalog "Water Supply." Just ask for it.

THE DAYTON PUMP & MANUFACTURING COMPANY Dayton, O. U.S.A.

Branches in New York, Philadelphia, Boston and San Francisco



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IRON & BRONZE
STRVCTVRAL STEEL

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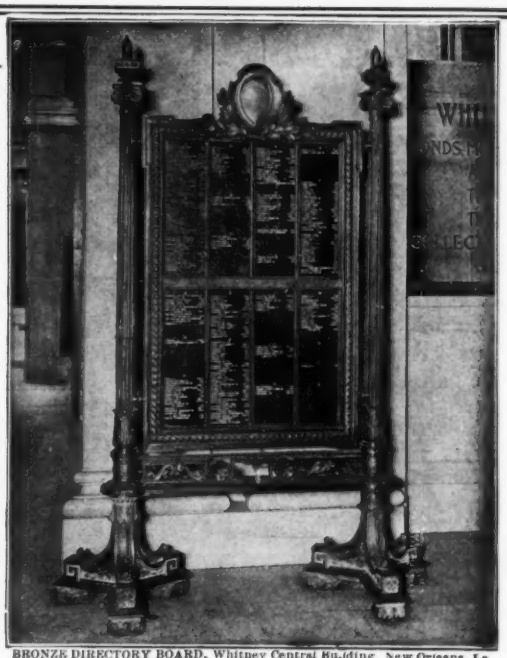
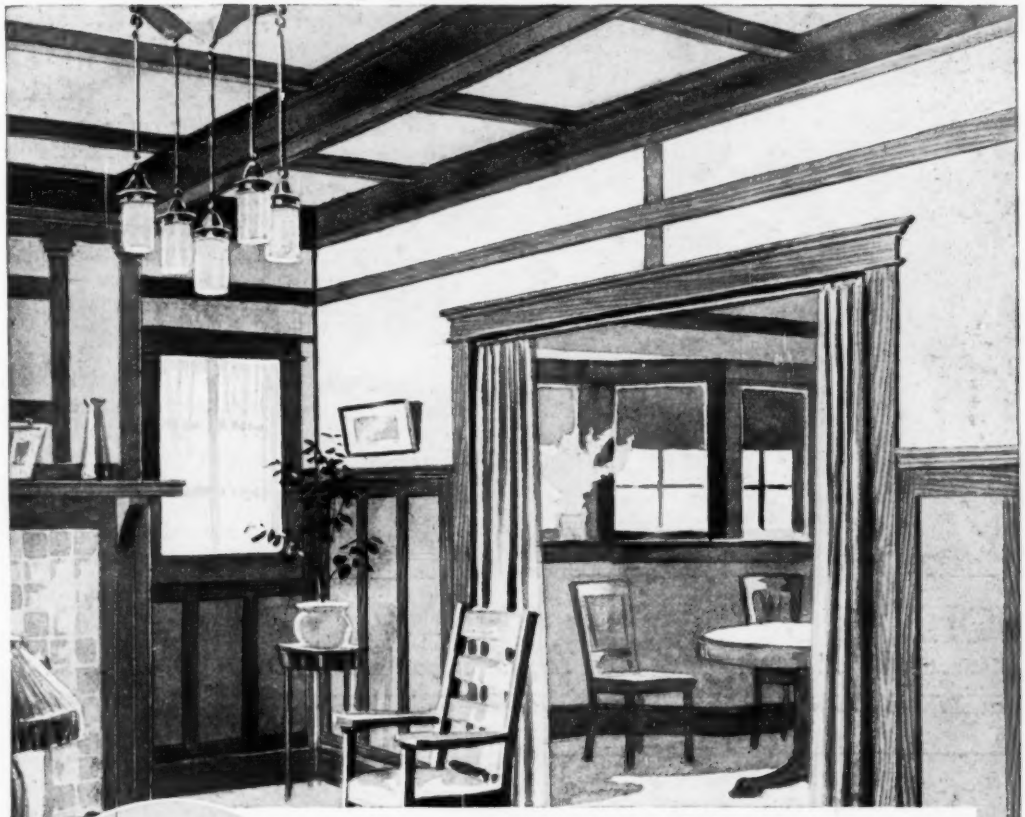


BRONZE DIRECTORY BOARD, Whitney Central Building, New Orleans, La.
Clinton & Russell & Emile Weil, Associate Archts.

WASHINGTON, D.C. *PITTSBURG* *CHICAGO* *ST. LOUIS* *DENVER*
SAN FRANCISCO *FT. WORTH* *NEW ORLEANS* *ATLANTA* *RICHMOND*



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Interior Flat Wall Paint
Mill White Flat
Mill White Gloss

In order to secure satisfactory and uniform results for users of Fiberlic, the above paints have been developed. The quality of these paints is unexcelled.

Write for booklet.

For Walls and Ceilings

Fiberlic

No, it is Not Another "Wall Board"

If you were designing your own home, which of the two materials would you choose for your walls and ceilings, bearing in mind the following essentials?

Strength. Which strikes you as being the stronger, a material made of ground wood and waste paper (as practically all wall boards are), or Fiberlic, made from long, tough, coarse imported root fibers?

Fire Resisting. Can you imagine how any wood product—any "wall board"—can resist fire? We've put Fiberlic to the blow-pipe test, but rather than give you the results here we would like you to make the same test also—yes, you will be surprised.

Insulating Qualities. Because Fiberlic is made of one uniform raw material—tough, thick, strong, compressed root fibers—it must be denser and therefore capable of resisting heat, cold and sound much better than "wall boards" made up, as they are, of ground wood, waste and other materials.

Can You Prove Our Claims? Quite easily. Write for samples of Fiberlic and put them alongside the best "wall boards." Put them to similar tests—we will leave the verdict with you. We will be greatly mistaken if the appearance—the very "feel"—of Fiberlic does not convince you of its superiority.

Samples and Prices Quoted on Request

THE FIBERLIC CO., Camden, N. J.

New England Branch:
Washington Street North, Boston, Mass.

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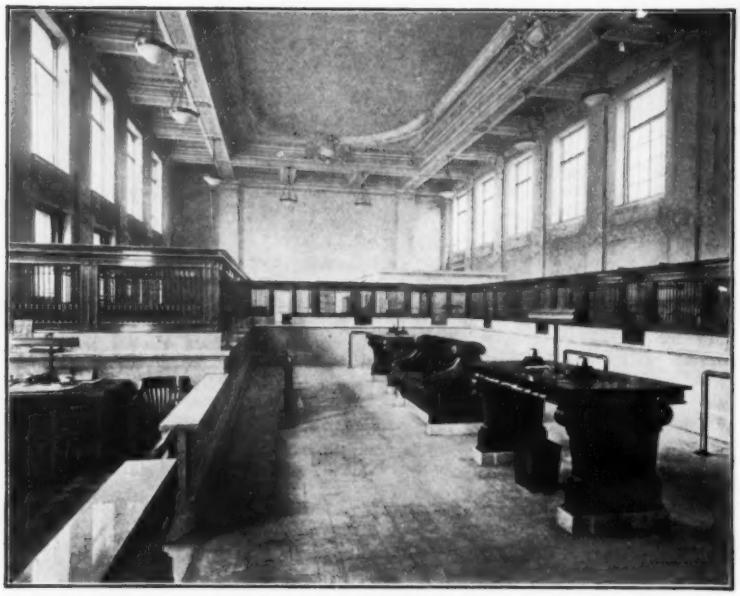

BANKING ROOM
BRONZE

This view of the Banking Room of the German Bank, Louisville, Ky., D. X. Murphy & Bro., Architects, conveys some idea of the scope of our work: Counter Screen, Check Desks, Seat, Low Gates, etc., were all made and set by us.

Our bronze meets the utilitarian and artistic requirements of both exterior and interior. It provides the highest possible value at consistent, attractive figures. Let us demonstrate the reasonableness of our prices.

JOHN POLACHEK BRONZE & IRON CO.

Distinctive Metal Work — 480 Hancock Street, LONG ISLAND CITY, N. Y.

Presto

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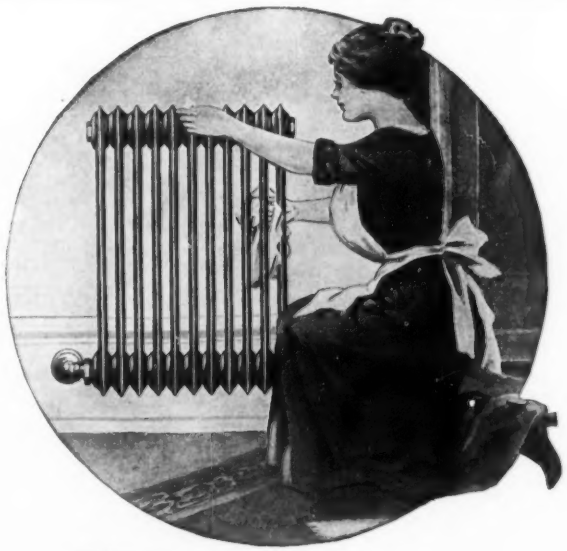
RADIATORS

Smooth, even surface—Refined appearance—Every part easily accessible for hand-cleaning.

Light, durable, compact—Occupy one-fourth less space and may be attached TO THE WALL—OFF THE FLOOR—OUT OF THE WAY.

Supply quick, well-diffused, inexpensive, satisfying heat.

Made in all standard heights, and sizes for every heating requirement. Ask for catalog "U".



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Mounted in Bronze

A semi-indirect effect installed recently in a solarium

A fixture of unusual beauty and character

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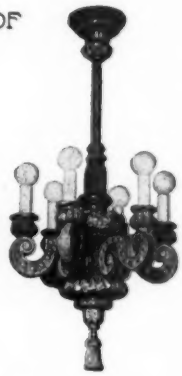

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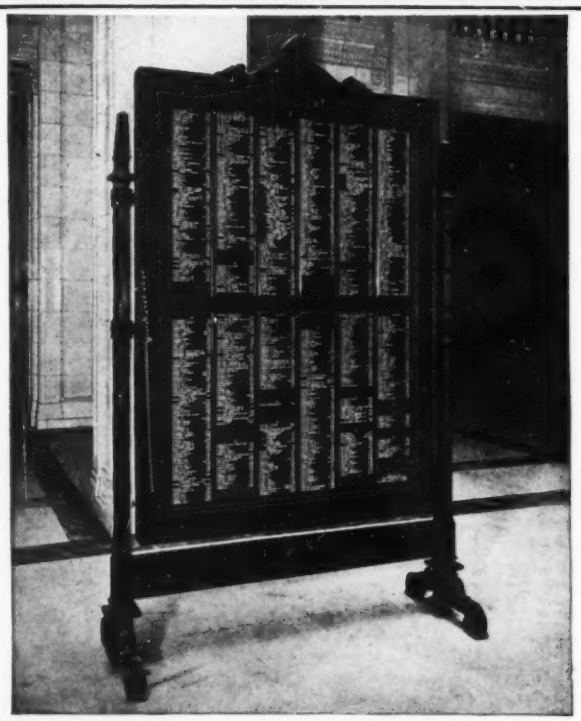
CATALOG-SENT-TO-ARCHITECTS-ONLY



BULLETIN BOARD

Insurance Exchange Building

As shown in Sweet's, 1915, on pages No. 400-401

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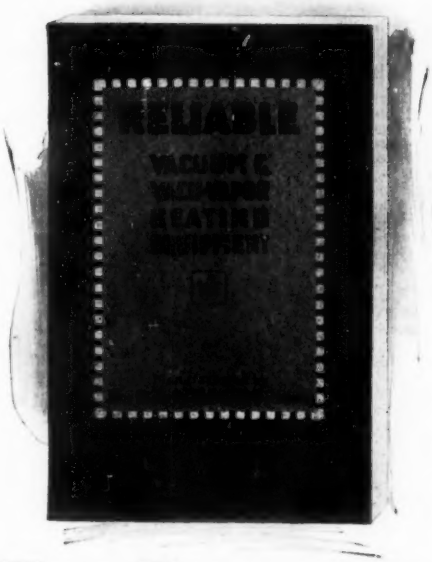
Minneapolis, Minn.



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Reliable VACUUM HEATING Equipment

AIR LINE—RETURN LINE—VACU-VAPOR

and all RELIABLE Heating Specialties---Electric and Hydraulic Vacuum Pumps, VacUstats, Vacu-Traps, Vacu-Checks, Vacu-Graduate Packless Radiator Valves, "4 V" Valves, etc. The catalog also contains suggestions for specifications covering the three styles of installations.

This catalog explains why the RELIABLE Vacuum and Vacu-Vapor Heating Equipment gives *most efficient* and *economical heating;* is *easy* to *operate; noiseless; requires no adjustments;* and supplies *uniform* and *adequate* heating (evenly distributed) in *zero* or *mild* weather.

RELIABLE Heating Equipment is Standardized and staple, and is carried in stock by most representative jobbers.

Drop us a line today for your copy of new* RELIABLE *Heating Equipment catalog. Ask for Booklet "A"

THE BISHOP-BABCOCK-BECKER CO.

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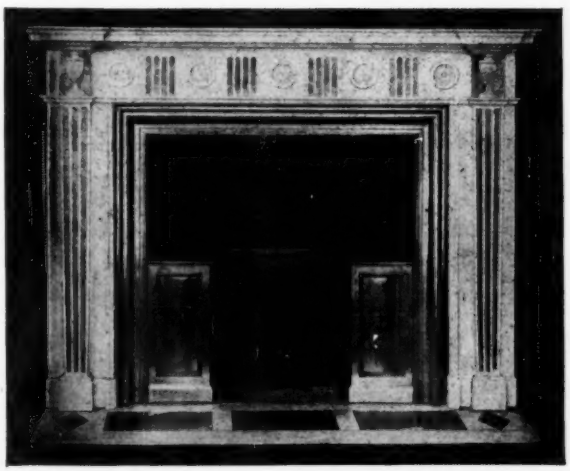

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"We have been using your BAYONNE ROOF & DECK CLOTH as a substitute for tin for some time, and have found it so far superior in every way that in all of our specifications for new houses we call for your roofing for all veranda and porch roofs, and all roofs with flat pitch. We recommend your roofing to any one thinking of building, and while it costs less than tin to lay, it will outlast tin four times and give better satisfaction in every way. We have never yet found a leak where we have used your BAYONNE ROOF & DECK CLOTH." R. H. Houghtaling & Son, Coytesville, N. J.

BAYONNE does not buckle, crack or peel, and is laid on the dry boards—making a very neat and quick job that will last indefinitely.

Write for Sample Book "L" today. It gives prices and laying instructions. See Sweet's, Page 539.

JOHN BOYLE & COMPANY, Inc.

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Iron Railings and Entrance Gates of appropriate design and perfect proportion would add much to the dignity and attractiveness of many country places.

We have catalogues illustrating Entrance Gates and Iron Railings, Lawn Fences, Tennis Court, Poultry and Kennel Yard Enclosures, Aviaries, Arbors, Trellises, etc., and will gladly mail you the one you need.

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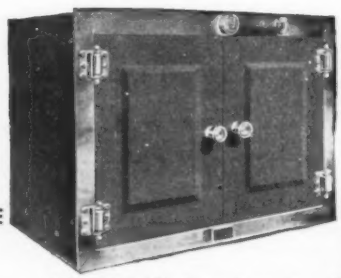

For Apartment or Dwelling

"'Tis spoiled and so is all the rascal meat!"

—*Taming of the Shrew.*

If your plans go awry because of late dinner guests, the dinner itself need not. And incidentally you need not be kept on the qui vive—not if there's a Prometheus Food and Plate Warmer in your home!

No matter how long the delay, the meal kept waiting in this little compartment in the wall, will come to the table fresh, palatable, savory—just as you planned it. Simple, too—just turn the button and close the doors.

Prometheus—THE Food and Plate Warmer—Electric, of course

Built to order at 239 E. 43d Street, New York, by

THE PROMETHEUS ELECTRIC CO.

Plan Every Home With *Built-in* Wardrobes as They Are Far Ahead of the Old Fashioned Closets

Send for free and full detailed information showing how to plan a house with these built in wardrobes. Also illustrated price list of the extension carriers and garment hangers required to equip them with.

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GRAND RAPIDS, MICH.

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The latest dance hits while they are hits—the latest in every class of vocal and instrumental music—are on Columbia double-disc records. A new list on sale the 20th of every month. And at a standard price of 65 cents—the price of more than a thousand Columbia double-disc records.

Buy Columbia records because they are better records—universal in selections and faultless in recording.

Hear the newest records at your Columbia dealer's. Today! And hear any other particular records you like, you have a choice of more than 4000.

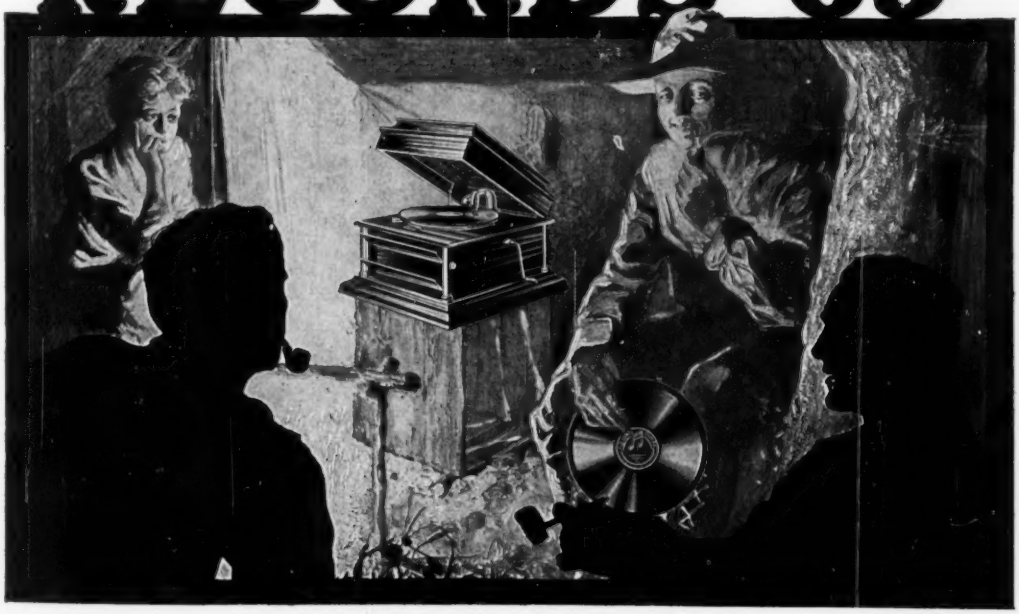
And while you are about it—hear the Columbia Grafonola "Favorite" at $50 as illustrated; the model that for more than four years has been sold to more people than any other instrument—regardless of price or make. It has every Columbia tone feature, including the exclusively Columbia tone control leaves. Other Columbia Grafonolas from $17.50 to $500—and on easy terms if you wish.

Columbia Graphophone Co.

Box F489 Woolworth Bldg., New York

TORONTO: 365-367 Sorauren Avenue. Prices in Canada plus duty. Creators of the Talking Machine Industry. Pioneers and Leaders in the Talking Machine Art. Owners of the Fundamental Patents. Dealers and Prospective Dealers write for a confidential letter and a free copy of our book "Music Money."

RECORDS-65¢ Double-Disc



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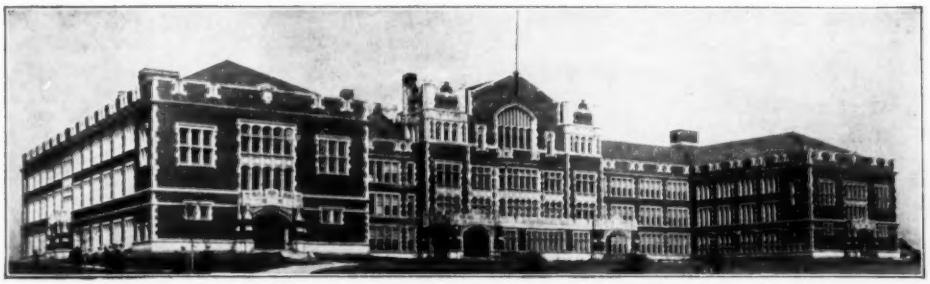

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THE ANSWER

Hydrated lime plaster does not reflect or transmit sound. Its porous nature absorbs and deadens sound waves and produces better acoustics.

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It does not contain sulphuric acid or any other element which would corrode or destroy metal lath.

Adheres to wood lath, metal lath, brick, tile or concrete.

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National Metal Molding Co., Pittsburgh, Pa.

Conduits—Flexible and Rigid.
Western Conduit Co., Youngstown, O.

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Manufacturing Equip. & Eng. Co., Boston, Mass.

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Southern Cypress Manufacturers' Assn., 1211 Hibernia Bank Bldg., New Orleans, La.
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Fiberlic Co., Camden, N. J.

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Erskine-Danforth Corp., 2 W. 47th St., N. Y.

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Barrett Specification Roofs

Photo by Engineering News, N. Y.

Storehouse of
Naumkeag Steam Cotton Company, Salem, Mass.
Builders—Eastern Expanded Metal Co. Engineers in charge of this building are now organized as N. E. Concrete Construction Co., Boston, Mass.
Roofing Contractors—Warren Bros., Boston, Mass.

In the path of the great Salem fire—

THIS warehouse was in the centre of the great Salem fire of 1914 which swept over 250 acres of the city. It was built of reinforced concrete and roofed along the lines of The Barrett Specification. In the fierce path of flame, the rain-water conductors and the zinc flashings at the edge of this roof were melted down, but the roof itself was left intact.

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> *"The flames and smoke were driven toward these from a burning area extending over a mile back and a third of a mile in width and swept these mills along their exposed front of about a quarter of a mile in length with a heat which no ordinary construction could withstand."*

The test was a triumph for reinforced concrete and this type of roofing. No wonder Barrett Specification Roofs take the base rate of fire insurance!

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Special Note

We advise incorporating in plans the full wording of The Barrett Specification in order to avoid any misunderstanding. If any abbreviated form is desired, however, the following is suggested:

ROOFING—Shall be a Barrett Specification Roof laid as directed in printed Specification, revised August 15, 1911, using the materials specified and subject to the inspection requirement.

We should like to send every architect, engineer and building owner a copy of the Underwriters' Laboratories report on Barrett Specification Roofs. Address our nearest office.

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Cutler Mail Chute Co., Rochester, N. Y.

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Pine—North Carolina.
North Carolina Pine Assoc., Norfolk, Va.

Pipe Joint Compound.
J. G. Hetzel, Newark, N. J.

Pipe, Cast Iron Soil Pipe.
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Pipe, Steel.
Youngstown Sheet & Tube Co., Youngstown, O.

Pipe (Wrought Iron).
Youngstown Sheet & Tube Co., Youngstown, O.

Pipe, Welded—National.
National Tube Co., Frick Bldg., Pittsburgh, Pa.
Youngstown Sheet & Tube Co., Youngstown, O.

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Prometheus Electr. Co., 237 E. 43d St., N. Y. C.

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H. W. Johns-Manville Co., N. Y. C.
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John Trageser Steam Copper Wks., N. Y. C.
Trenton Potteries Co., Trenton, N. J.
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United States Gypsum Co., Chicago, Ill.

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Jenkins Bros., New York.

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Wheeling Corrugating Co., Wheeling, W. Va.

Roofing Slate.
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Roofing Tin.
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Taylor Co., N. & G., Philadelphia, Pa.

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Caldwell Mfg. Co., Rochester, N. Y.

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Crittall Casement Co., Detroit, Mich.
Detroit Steel Products Co., Detroit, Mich.
The Majestic Co., 425 Erie St., Huntington, Ind.
The Zahner Metal Sash & Door Co., Canton, O.

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Samson Cordage Works, Boston, Mass.
Smith & Egge Mfg. Co., Bridgeport, Conn.

Sash Pulleys.
American Pulley Co., Philadelphia, Pa.
Russell & Erwin Mfg. Co., New Britain, Conn.

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H. W. Johns-Manville Co., N. Y. C.

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Sun Dials.
Erkins Studios, 224 Lexington Ave., New York.

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The Pfaudler Co., Rochester, N. Y.

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Atlantic Terra Cotta Co., 1170 B'way, N. Y. C.
Galloway Terra Cotta Co., Philadelphia, Pa.
O. W. Ketcham, Philadelphia, Pa.
Northwestern Terra Cotta Co., Chicago, Ill.
The Winkle Terra Cotta Co., St. Louis, Mo.

Tile.
Jas. C. Barry Co., 95 North St., Rochester, N. Y.

Tin Plate.
American Sheet & Tin Plate Co., Pittsburgh, Pa.
N. & G. Taylor Co., Philadelphia, Pa.
Wheeling Corrugating Co., Wheeling, W. Va.

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Bobbink & Atkins, Rutherford, N. J.

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Cheney Bros., 4th Ave. and 18th St., N. Y. C.

Valves.
Crane Co., Chicago, Ill.
Detroit Lubricator Co., Detroit, Mich.
Jenkins Bros., 80 White St., N. Y. C.
National Tube Co., Pittsburgh, Pa.

Varnish.
Berry Brothers, Detroit, Mich.
F. W. Devoe & C. T. Raynolds Co., Fulton and William Sts., N. Y. C.
Pratt & Lambert, Inc., Buffalo, N. Y.
Edw. Smith, Long Island City, N. Y.
Standard Varnish Works, New York-Chicago.

Vault Lights.
American Luxfer Prism Co., Heyworth Bldg., Chicago, Ill.

Ventilators.
American Blower Co., Detroit, Mich.
Globe Ventilator, Troy, N. Y.
The Higgin Mfg. Co., Newport, Ky.
Ohio Blower Co., Cleveland, O.

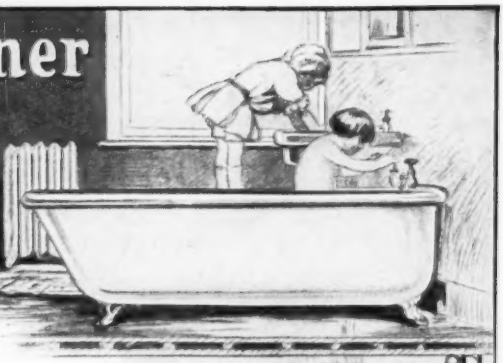
Ventilating Fans.
American Blower Co., Detroit, Mich.
Ohio Blower Co., Cleveland, O.

Wall Board.
The Beaver Board Co., Buffalo, N. Y.

Wall and Ceiling Finishes.
M. Ewing Fox & Co., 136th St. & Rider Ave., N. Y.

Walnut—Black. (See page 32.)

Every Houseowner will appreciate Prompt, Plentiful Hot Water



Hot water instantly any time has proven so decided a convenience that there are now more than three hundred thousand

"Pittsburg"
Gas Water Heaters

of various types providing

"Quick As a Wink"

hot water service—there will soon be half a million in use.

Every well equipped home requires dependable hot water service. A Gas Water Heater will provide this service promptly—our complete line of catalogs should prove of service—a postal will bring them to you promptly—without charge.

Specify "Pittsburg" for particular clients.

Pittsburg Water Heater Company

PROMPT SERVICE HOT WATER

Pittsburg, Pennsylvania

MOTTLED PURPLE AND GREEN ROOF SLATE

Purple, with Green Mottlings

Singularly effective—this slate of a base color of purple flecked with mottlings of varying tones of green. It represents the handicraft of Nature and to Nature is attributable the most artistic accomplishment.

Random Widths

The "beauty of the broken line" permits of no exception--not even in the roof. Our slate is made in random widths thus relieving the roof of monotony of line.

Roof Layout

We would emphasize the fact that we are not merely quarriers of slate—we also indicate how the roof can be laid out to the best advantage. It is your privilege to exact this service of us.

Send for assortment of Slate Samples, including Red, Green, Black, Purple and their various mottled effects.

E. J. JOHNSON

Quarrier of Slate

38 PARK ROW NEW YORK

A DIRECTORY FOR ARCHITECTURAL SPECIFICATIONS—Continued.

Wardrobes.
John Thomas Batts, Grand Rapids, Mich.

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Billings-Chapin Co., Cleveland, O.
Ceresit Waterproofing Co., Chicago, Ill.
Dexter Bros. Co., Boston, Mass.
J. G. Hetzel, Newark, N. J.
Sonneborn Sons, Inc., L., 263 Pearl St, N. Y.
Wadsworth-Howland Co., Inc., Boston, Mass.

Water Supply.
Dayton Pump & Mfg. Co., Dayton, O.
Kewanee Private Utilities Co., Kewanee, Ill.

Weather Wear Roof Coating.
Ceresit Waterproofing Co., Chicago, Ill.

Weatherstrips for Doors.
Schouler Cement Const. Co., Newark, N. J.

White Pine.
White Pine Bureau, St. Paul, Minn.

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Detroit Show Case Co., Detroit, Mich.

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American Steel & Wire Co., Chicago, Ill.

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Memorial and Historical Tablets
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Conducted by the Society of Beaux-Arts Architects and
Free Courses in Sculpture and Painting in their Application to Architecture

Under the joint direction of the Society of Beaux-Arts Architects, the National Sculpture Society and the Mural Painters.

Architectural Design **Sculpture**
Ornamental Modeling **Mural Painting**

These courses are modeled on the principles of teaching of the Ecole des Beaux-Arts of Paris, and are intended for the instruction of students of Architecture, Sculpture and Painting, and of apprentices and workmen in the artistic trades allied to Architecture. Any course may be entered at any time during the year. The courses in Architecture and Painting may be done outside of New York City. For the courses in Sculpture and Ornamental Modeling the Society maintains its Sculpture Studio in its Building, in New York City.

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The UNIVERSITY OF PENNSYLVANIA

offers courses in **ARCHITECTURE** as follows:

1. **A four-year course,** leading to the degree of B. S. in Arch. An option in architectural engineering may be elected.
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4. Summer School instruction in architectural subjects.

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Split Proof
Warp Proof
Water Proof
Germ Proof

No fault can be found with the Never Split closet seats, for the essentials—strict sanitation and elegant appearance, proof against splitting, opening of joints or warping are all cared for by the exclusive construction of Never Split Seats.

Four bolts with nuts and washers in the four joints of Never Split Seats tell the "how" and "why" of Never Split superiority.

When you have to specify a closet seat in your residence, school, hotel, factory or public building work, why not specify the "best"—the Never Split Seat?

No greater cost, no more difficult to install and above all no chance of a dissatisfied client, for Never Splits really **never split.**

We have prepared a limited number of miniature seats for demonstration purposes; one of these will be sent you gratis, upon receipt of a postal.

NEVER SPLIT SEAT CO.
EVANSVILLE, IND. U.S.A.

Arkansas Soft Pine

Is one of the good woods you are specifying, or should specify, for many of the purposes for which you call for the use of wood to serve as you have every right and reason to believe it will, and should, serve.

You May Be Told

By the contractor or the material man, that "all yellow pine is the same." That is a misstatement. If they were "all the same" manufacturers of the higher class building wood, **Arkansas Soft Pine,** would not spend a great deal of money each year to tell you about the special beauties, values and economies of their product.

A Distinctive Wood

The many pines of the south differ more in character than appearance. Of all the pines of the southern states **Arkansas Soft Pine** has no competitor worthy of the name for factory uses and home building work.

Are You Getting It?

Arkansas Soft Pine is best suited for the purposes for which it is recommended. Its use for purposes for which it is not suited is not advocated.

Send TODAY for your copy of "An Architectural Aid." It contains specific information relating to this wood.

Arkansas Soft Pine Bureau

608 South Dearborn Street **Chicago, Illinois**

Viaduct Leading from Union Depot, Detroit, Mich.

Painted with Dutch Boy Red Lead-in-Oil

4 to 1
for
Red Lead

THE report of Committee XV, distributed at the recent convention of the American Railway Engineering Association held in Chicago, indicates that four out of every five railroads in the United States who apply shop coats of paint use red lead.

In response to an inquiry sent out by the committee as to the material used for shop coat, forty-six domestic railway engineers made a definite selection. Seven stated that they specified a shop coat of oil only, preferring to do all the painting themselves in the field.

Thirty-one of the thirty-nine who specified paint for shop coat, or about eighty per cent., used red lead—*four to one in favor of this eminently superior paint for metal.*

Preference for red lead is just as marked in other lines of industry. Many architects are specifying

Dutch Boy Red Lead-in-Oil

(*Pure Red Lead in Paste Form*)

Dutch Boy red lead-in-oil, being high-grade red lead thoroughly incorporated with linseed oil, possesses the qualities which are responsible for red lead's wide-spread popularity. To these merits are added the advantages of a paste pigment.

Dutch Boy red lead-in-oil is a highly oxidized, finely ground red lead and is convenient to handle because it is in paste form. It protects effectively and economically; *effectively* because it sticks to metal and keeps moisture out, *economically* because it is easy to mix and easy to apply, spreads far, and forms with more linseed oil a tough, durable, homogeneous, rust-defeating film.

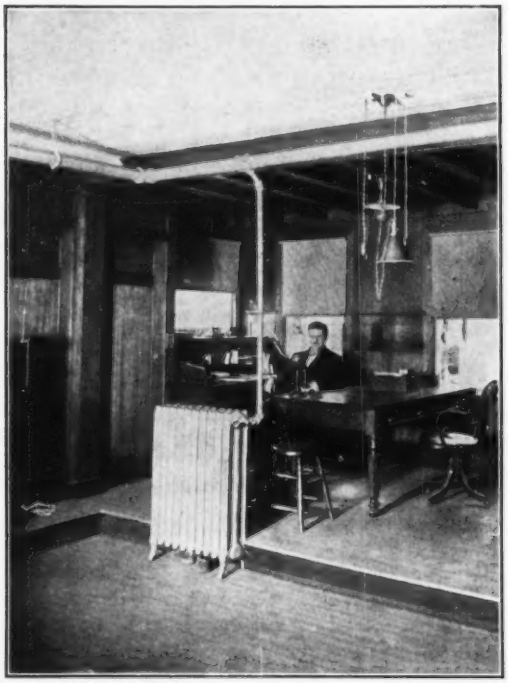
A trial of Dutch Boy red lead-in-oil will convince you of its merits. May we send a sample for examination, with booklet, "Pure Red Lead In Paste Form," which gives more facts and working formulas?

NATIONAL LEAD COMPANY

Manufacturers also of Dutch Boy White Lead and Dutch Boy Linseed Oil

Office in each of the following cities:

New York, Boston, Buffalo, Chicago
Cincinnati, Cleveland, St. Louis, San Francisco
Pittsburgh (National Lead & Oil Co.)
Philadelphia (John T. Lewis & Bros. Co.)



This tells why

PHILIPPINE MAHOGANY

is an excellent substitute for African Mahogany at two-thirds the cost.

African Mahogany is not made into lumber until after the logs reach this country, where labor costs are highest. It is also subject to duty. The timber supply has been interrupted by the war, consequently costs are high and increasing.

Philippine Mahogany on the other hand is cut from virgin forests and sawed into lumber in a country where labor is cheapest. Choice grain and low cost result. It comes in duty free. All logs produce some low grade lumber. Our low grade stock is sold in Manila and the East, only the cream of our lumber coming to the United States.

The St. John Woodworking Co. of Stamford, Conn., have used our Philippine wood in their office, as shown in annexed cut. They have obtained beautiful results at small cost, by finishing in wax and oil.

It will pay you to get samples and prices. Write the agents of

THE INSULAR LUMBER CO.

Indiana Quartered **Oak** Co., 52 Vanderbilt Ave., New York City; 88 Broad St., Boston.
Warren Ross Lumber Co., Jamestown, N. Y.
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A Handsome Color-Combination

The roofs of this house are stained with the light moss-green shade of

Cabot's Creosote Shingle Stains

and the walls are finished in the soft, brilliant white of Cabot's Old Virginia White. The contrast is rich and beautiful and the effect will be lastingly satisfactory. The merits of Cabot's Stains are known all over this country and in many other lands, and the clean, cool "whitewash effect" of the Old Virginia White is a delight to artistic people who dislike "painty" colors. Low priced, easy to apply, wood-preserving.

You can get Cabot's Stains all over the country. Send for stained wood samples and name of nearest agent.

SAMUEL CABOT, Inc., Manfg. Chemists, Boston, Mass.
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Agents All Over the Country

Waterproof Cement and Brick Stains, "Quilt," Conservo Wood Preservative, Dampproofing.

Finished with Cabot's Creosote Shingle Stains and Old Virginia White. Milton H. McGuire, Architect, N. Y.

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WINDSOR CHAIRS

—to last 100 years

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Send for Descriptive Leaflet "L."

Erskine-Danforth Corporation
2 West 47th St. New York

Model W-5A

No More Screen Trouble

No repairing, no rewiring, no repainting

HIGGIN ALL-METAL SCREENS

Cost about $2.50 per opening and last a lifetime. Write for estimate.

The Higgin Manufacturing Co.

Also manufacturers of Higgin All-Metal Weather Strip

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Reproductions of Antique Fabrics

Cheney Brothers have secured some rare antique fabrics and have reproduced them *exactly*, in color, pattern and weave.

Some are in twenty-five and some in fifty-inch widths. In each case these exquisite

CHENEY SILKS

show the original coloring of the antique fabric.

We also have a line of color combinations suitable for the period or style of decoration required for modern use.

In addition to the above, we have a line of antique velvets in a large variety of colors. Also made in twenty-five and fifty-inch widths.

If you care to purchase a sample length of one color, we will supply you with color swatches showing the complete range. These will be a great aid to you in securing orders.

CHENEY BROTHERS
Silk Manufacturers
4th Avenue and 18th Street, New York

NORTH CAROLINA PINE
"THE WOOD UNIVERSAL"

A Universal Building Material

NORTH CAROLINA PINE is rightly termed "the wood universal." It is readily adapted to all kinds of building construction, both exterior and interior. Can be used for apartments, duplex dwellings, farm-buildings and outbuildings, as well as for outside ornamentation such as porches, trellises, shingles, etc. North Carolina Pine is not "Yellow Pine," but is whiter and softer in texture, making an ideal substitute for White Pine.

Architects' and Builders' Reference Book FREE

Write for Architects' Reference Book, prepared in convenient size for filing. Describes the many uses of North Carolina Pine and illustrates in colors, the beautiful effects obtainable. Specimen panels sent on request.

North Carolina Pine Association
NORFOLK, VA.

Why "Made in the U. S. A."?

Other things being equal, it is good business and good policy and good patriotism to favor and use the things made in America, rather than the things made in foreign countries.

"Imported" no longer signifies quality.

Certainly, in the matter of woods, there is no need to go abroad for material. The mountains of the Caucasus, the jungles of Africa and the forests of France and Austria produce nothing better than our own American timber lands, the pride of which is

AMERICAN BLACK WALNUT

This wood is generally conceded to be the finest material for interior finish in the world, without exception. This is so, because it is beautiful in color and general appearance; because it is mild and easily worked; because it resists wear, change of temperature and exposure to the elements; because, in short, in it are found in greatest degree all of those qualities which are demanded by the architect, the builder and the owner.

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East St. Louis Walnut Company,
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Equitable Building

New York

The Largest Office Building in the World

DEVOE VELOUR FINISH, the flat washable oil paint, used on the walls.

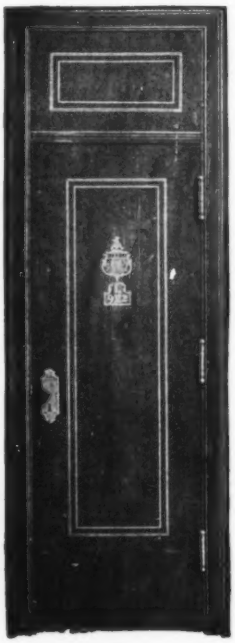
DEVOE BLACK FLEXILE PAINT used in the elevator shafts.

DEVOE BLACK VELOUR FINISH used on stairways and elevator grill work

DEVOE Best Colors in Oil, DEVOE Japan Colors

DEVOE Gold Leaf and DEVOE Brushes
used throughout the building.

F. W. Devoe & C. T. Raynolds Co.
105 Devoe Bldg., New York



If you want beautiful doors in that new hotel, hospital, office building or residence, use

RODDIS'
FLUSH VENEERED DOORS

In fine woods, like mahogany and Circassian walnut, they are less expensive than the old style doors.

They are sanitary.

They retard fire and sound.

They will not shrink and swell.

There are no joints to come apart.

They grow richer in appearance with age.

They possess dignity and character, and give the same sense of well being as any other superior article. Standing before the beautiful polished surface of this door, one cannot fail to be impressed with its richness.

Send for our catalog showing these doors in the natural colors of the wood.

RODDIS LUMBER & VENEER CO.
Marshfield :: :: :: :: :: Wisconsin

For Those Who Specify Good Marble and Tile Work

To meet the requirements of our clients for whom we have been executing high-grade marble and tile work for the past twenty-eight years, and for those of our friends who have use for practical, concise descriptions and a catalog of the different marbles and tiles used in interior and exterior building-work, we have prepared this book which sets forth not only specifications of material, but gives examples and photographic illustrations of their proper use.

As this edition is limited, we reserve the right to send catalog unless we are convinced that it will be of practical use to those who ask for it. Please use business letterhead.

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Stearns Florida Gulf Cypress

Cypress, it would seem, improves rather than deteriorates under the influence of the elements as indicated by the beautiful gray color it developes and the centuries of service it provides. But you will prefer Stearns Florida Gulf Cypress to all others because it is

Free of Knots and Beautifully Grained

It permits of the best interiors artistically as well as providing the greatest life where exposed to the elements. Learn of its uses.

The A. T. Stearns Lumber Co., Neponset, Boston, Mass.

"THE OLDEST DOOR IN THE WORLD."

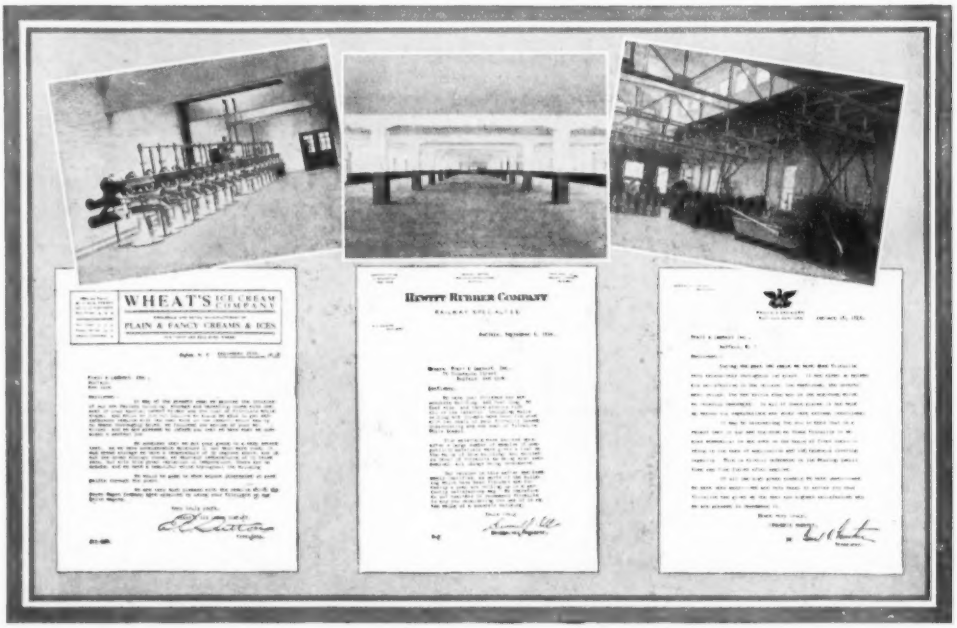
It may be seen in the Church of Santa Sabina, on the Aventine Hill in Rome. "This door is of Cypress and is adorned with carvings, mostly of the 5th Century. The upper carving at the left is said to be the oldest representation of the crucifixion." Another archaeological authority (in Princeton, New Jersey) writes, "Opinions vary as to the dates of these doors, but the weight of opinion puts them as early as the 5th or 6th Century, A.D." (DOES CYPRESS, "The Wood Eternal," LAST?)

(Ed.ne Alinari) P.ª L.ª N.ª 6942. ROMA - Chiesa di S. Sabina. Imposte dell'ingresso al monastero. (VI Secolo.)

If a Cypress door continues in daily use for over 1400 years, and you build your new home of Cypress, all or in part, how much will you and your posterity save in repair bills if put out at compound interest? The same logic applies to present repairs or additions on structures built by people who did not learn about "The Wood Eternal" soon enough. Mansion, cottage, back fence or pergola—it's all the same.

The photograph above (much larger) on India Tint paper, is the "art supplement" to Volume 38 of the internationally famous Cypress Pocket Library. This vol. is about "home-grown" furniture and contains full sized detail plans and complete specifications for seven different furniture designs. 52 pages. 12 illustrations. 2 supplements. It is yours on request, with our compliments. The sooner the better. (Also ask for Vol. 1.)

Southern Cypress Manufacturers' Ass'n 1211 Heard National Bank Building, Jacksonville, Fla. and 1211 Hibernia Bank Building, New Orleans, La.



The Ideal Finishing Material For Manufacturing Plants

WHILE the reduced fac-simile letters from the owners of the buildings shown above may be too small to read, they signify the satisfaction that

Vitralite

THE LONG-LIFE WHITE ENAMEL

will give in large industrial plants, as well as in the finest residences. The experience of others is most reliable data to go by. These three big plants, as well as many other large industrial plants, have proven the efficiency of Vitralite, from the standpoint of sanitary qualities, light, durability and economy in *first*, as well as *final cost*.

Vitralite Cement Undercoating

Over concrete, cement, brick and stone surfaces, Vitralite is used over Vitralite Cement Undercoating, which has proven by extensive tests to better resist the discoloration and deteriorating action of excess alkali in cement, than any other of the several best known coatings which we tested.

Booklet and Sample Panels on Request

See Pratt & Lambert specifications, 1915 Sweet's Catalog; also, Specification Data, (Canada). An extensive variety of wood finishing effects may be seen in New York City at the Pratt & Lambert Architectural Show Room, 7th Floor, Cameron Building, 185 Madison Ave., Cor. 34th St., also at the Chicago and Buffalo offices.

PRATT & LAMBERT-INC.
VARNISH MAKERS
108 Tonawanda St., Buffalo, N. Y.
Factories
New York Buffalo Chicago Bridgeburg, Canada London Paris Hamburg

EVERY fire that destroys clinches the call for metal. Every tree that falls brings nearer the universal adoption of metal trim in building.

—Not those crude "experiments" in metal—mere sheathings tacked on wood.

—Not metal trim which relies on wooden bucks or wooden frames.

But metal trim whose every part is metal, whose steel bucks anchor in the plaster, whose life is measured by the life of the walls themselves, fireproof and strainproof.

Such is the metal trim known as H & K STANDARDS

—built into and now on exhibition at our new showrooms, 8 West 40th Street, New York.

Never before have such refinements in form and finish been attempted or attained.

A visit will offer startling surprises.

A line will bring full information.

HALE AND KILBURN CO.
8 West 40th Street New York

OPENING TYPES IN METAL TRIM
DOOR STYLES TRIM STYLES

Factory
Philadelphia, Pa.

This attractive house is roofed with **Reynolds Shingles.** Architects will find all the needed information in Sweet's Catalog. Reynolds Shingles are specified by leading architects, for use on all classes of houses. Samples for the asking.

H. M. Reynolds Asphalt Shingle Co., Grand Rapids, Mich.

"Originators of the Asphalt Shingle"

They come in Bundles Ready to Lay

One Color for Roof; Another for Side Walls

Wonderful quality of shingles and permanent quality of earth pigment stains. They insure an artistic effect unsurpassed by other materials for roof and side walls.

"CREO-DIPT" STAINED SHINGLES

17 Grades. 16, 18, 24-inch. 30 Different Colors.

Save muss, waste and expense of staining on the job.

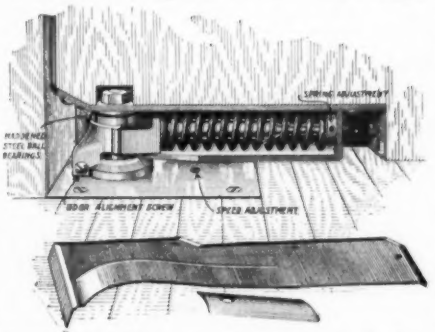
Before you build or remodel send for our book of "CREO-DIPT" Homes. Names of your architect and lumber dealer appreciated.

STANDARD STAINED SHINGLE COMPANY

Main Office and Factory:
1024 Oliver St., No. Tonawanda. N. Y.
Factory for Western Trade in Chicago

"Standard"

Checking Floor Hinge



Stops the flop—liquid principle permits door to come to dead center without oscillation; quick, noiseless, jarless.

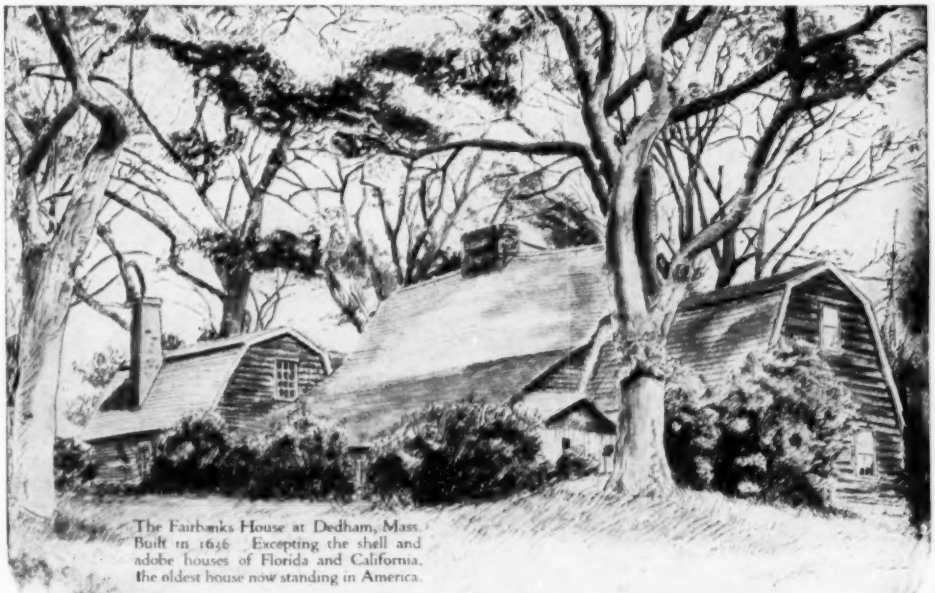
Insures alignment—simple turn of adjusting-screw prevents door sagging—no scraping—edge of door kept intact.

Controls speed—small screw facilitates slow or speedy operation of door as condition may require.

Write for Information
See Sweet's Catalog, 1915, Pages 808-9

Standard Manufacturing Company

Shelby, Ohio



The Fairbanks House at Dedham, Mass. Built in 1636. Excepting the shell and adobe houses of Florida and California, the oldest house now standing in America.

279 Years Old—and Still a Comfortable Home

For almost three centuries this unpainted house has stood exposed to the weather. Continuously occupied and still almost perfectly preserved, it offers convincing proof of the enduring qualities of

WHITE PINE

Ever since the Pilgrims landed, White Pine has been universally recognized as the wood preferred above all others in home-building. And figuring value in terms of service, it is the most economical.

Despite an impression of its scarcity, White Pine is still abundantly available today, as it always has been, in all grades and in any quantities desired. If the lumber dealers supplying your clients are at any time unable to furnish it, we would appreciate the opportunity of being helpful to you in securing it.

Beginning June first, we shall distribute the first of a series of authoratative, illustrated architectural monographs, each issue devoted to a particular architectural type or style of building constructed of wood. These monographs will be published bi-monthly under the personal direction of Mr. Russell F. Whitehead, formerly editor of "The Architectural Record" and of "The Brickbuilder," with text and drawings by representative American Architects. The subject of the first monograph will be "Colonial Cottages."

If the first issue does not reach you, and you feel interested in having it, kindly advise Russell F. Whitehead, 1861 Beacon Street, Boston, Mass., who will be pleased to furnish you with this and all subsequent numbers.

WHITE PINE BUREAU,
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Representing
The Northern Pine Manufacturers Association of Minnesota, Wisconsin and Michigan, and The Associated White Pine Manufacturers of Idaho

Cast Iron

Ver

Wrought

The entire story regarding which pipe to use in waste and vent lines is shown

Cast Iron Soil Pipe 80 Years Young

THE alternate wetting and drying of drainage lines, with its highly corrosive effects, the increasing use of hot water, the action of disinfectants and washing powders,

The Old Astor House which has been purchased by the City of New York to provide space for a new subway station shows eighty years of service for cast iron soil pipe and fittings. This pipe was carefully removed by the wreckers and was found to be in perfect condition.

The Astor House was built in the days when there were no substitutes for good material; and the plumbing contractor erected his work to last as long as the building. When soil pipe was installed in the waste and drainage lines all questions of damage from corroded pipe and the possible dangerous conditions in sanitation from leaking sewage and gases were settled forever. There could later be no corrosion of pipe, no tearing up of floors and walls to remove pipe wasted away with a few years of service.

Use Soil Pipe Should

Soil pipe removed from The Astor House after 80 years' service shows no deterioration.

Abendroth Bros., Port Chester, N. Y.
Alabama Pipe & Foundry Co., Anniston, Ala.
Anniston Foundry Co., Anniston, Ala.
Bessemer Soil Pipe Co., Bessemer, Ala.
Campbell Mfg. Co., Gadsden, Ala.
Casey-Hedges Co., Chattanooga, Tenn.
Central Foundry Co., New York, N. Y.
Coosa Pipe & Foundry Co., Birmingham, Ala.
Gadsden Pipe & Fittings Co., Gadsden, Ala.

Soil Pipe

sus

Pipe

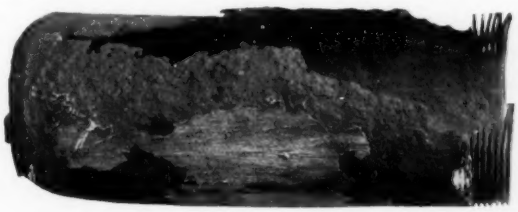
by the results in the two best known hotels in the world.

Wrought Pipe 20 Years Old

the ordinary acids and alkalies of a house drainage system, all have contributed to the complete corrosion of the wrought iron and steel pipe in less than twenty years. Cast iron pipe was unaffected by eighty years' service.

The Waldorf-Astoria, one of the most popular hotels in the World, has been confronted with an engineering problem caused by the use of wrought and steel pipe in the waste and vent lines. When this building was being erected the question of using this pipe for the work was submitted to a committee of plumbing experts and against their advice wrought and steel pipe was installed.

These lines, by the action of gases from the acids and alkalies carried by the sewage have entirely given out as shown by the cut. Strong corrosive gases are formed in the decomposition of sewage and the bacterial action which takes place. The damage cannot be figured simply by the cost of replacing the pipe and the ceilings and floors ruined, but includes the resultant loss of use of rooms during reconstruction work. This damage will be a constant one until all the drainage lines are replaced.



Wrought Pipe replaced in the Waldorf-Astoria Hotel less than 20 years after building was erected.

Where Soil Pipe Be Used

Haines, Jones & Cadbury Co., Philadelphia, Pa.
Krupp Foundry Co., Lansdale, Pa.
Medina Foundry Co., Medina, N. Y.
Salem Brass & Iron Mfg. Co., Salem, N. J.
Sanitary Co. of America, Linfield, Pa.
Somerville Iron Works, New York, N. Y.
Standard Foundry Co., Anniston, Ala.
Superior Mfg. Co., Bessemer, Ala.
Union Foundry Co., Anniston, Ala.
H. Wetter Mfg. Co., Memphis, Tenn.

A-1

Carey Flexible Cement Roofing

MAJESTIC BLDG.
DETROIT

1ST NAT.-SOO LINE BLDG.
MINNEAPOLIS

SCHMULBACH BLDG.
WHEELING

Whenever the best is demanded in construction materials, Carey Flexible Cement Roofing is given the preference. It covers these fine modern office buildings which stand as monuments of twentieth century achievement. Noteworthy is the fact that Carey Roofing covers today a majority of the largest and most prominent buildings in the United States, including factories, warehouses, convention halls, mills, elevators, railroad buildings, etc., offering substantial evidence of its efficiency and superiority as a roof covering. Specifications and full information upon request.

THE PHILIP CAREY COMPANY

GENERAL OFFICES: LOCKLAND CINCINNATI, OHIO. 50 BRANCHES

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Baltimore	Cincinnati	Kansas City	Montreal	Pittsburgh	St. Louis
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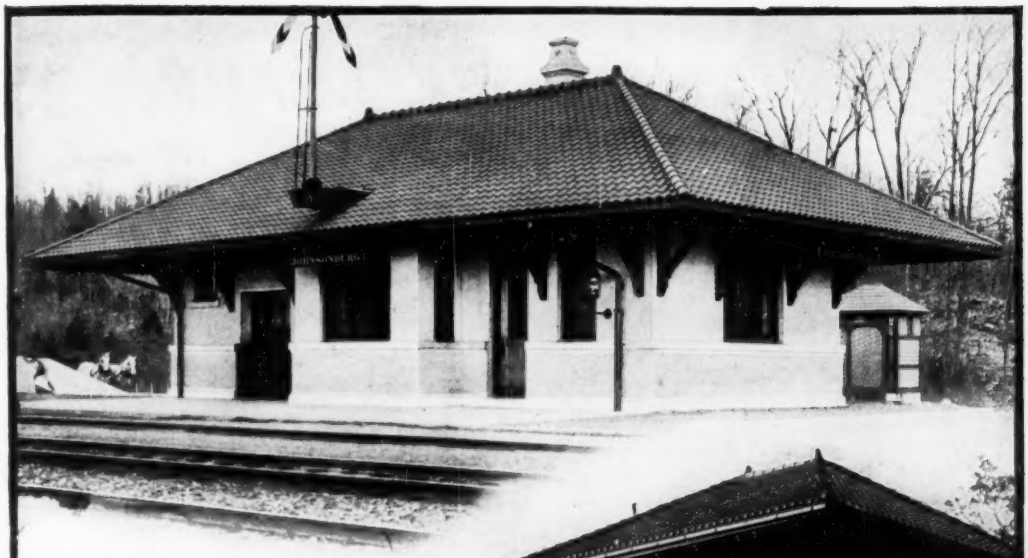
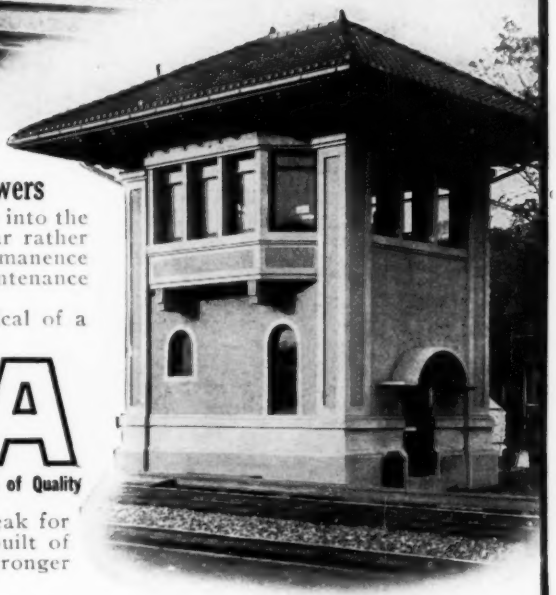
Boston	Dallas	Little Rock	New Orleans	Richmond	Toronto
Buffalo	Denver	Los Angeles	New York	San Francisco	Wheeling
Charlotte	Detroit	Memphis	Omaha	Seattle	Winnipeg
Chattanooga					Washington





Everlasting Stations and Signal Towers

Railroads are building with an eye far into the future. They calculate the cost per year rather than the first cost. And they want permanence and attractiveness as well as low maintenance cost.

The illustrations here shown are typical of a number of such structures built with

ALPHA

The Guaranteed Portland Cement—The High-Water Mark of Quality

by the D. L. & W. Railroad. They speak for themselves, in attractiveness. Being built of "everlasting concrete," they grow stronger with age.

Alpha Cement has been used extensively in prominent railroad work. The foundations and concourse floor of the great Union Station at Washington were laid with ALPHA. Over 250,000 barrels of ALPHA were used in building the Pennsylvania Railroad Terminal, New York.

ALPHA Portland Cement is tested hourly by chemists throughout the process of manufacturing. In composition, thorough burning, fine grinding and proper seasoning it is an exceptional cement. It is guaranteed to more than meet all standard requirements. You can always be absolutely sure of ALPHA quality.

Capacity, 25,000 barrels a day; storage for 2,000,000 barrels. Six great plants on six trunk-line railroads; one plant with private docks directly on the Hudson River, ideally situated for canal, coast and export shipment. Eight branch offices at your service.

Ask for a copy of the ALPHA Book No. 6, containing valuable information on cement and concrete work.

Alpha Portland Cement Co., General Offices: Easton, Pa.

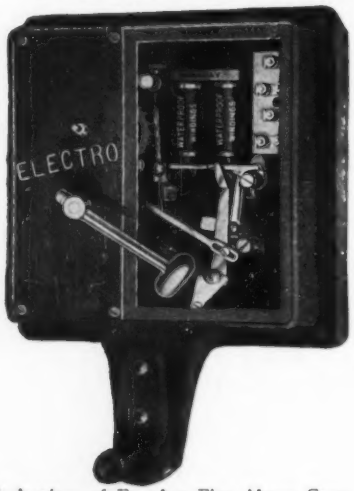
Sales Offices: New York, Chicago, Philadelphia, Boston, Pittsburgh, Buffalo, Baltimore, Savannah.

FARADAY FIRE ALARM

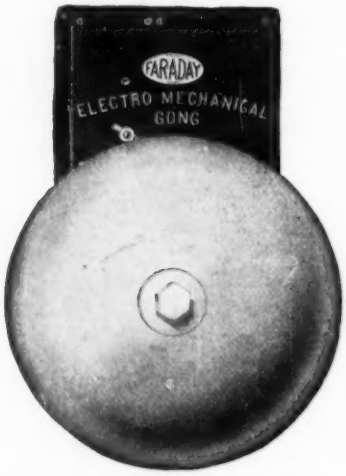
ELECTRICALLY—APPARATUS—SUPERVISED

FOR

Factories, Schools, Colleges, Public Institutions, Hotels, Theatres, Apartment Houses, Department Stores, Office Buildings and Warehouses.



Mechanism of Faraday Fire Alarm Gong
Electro-Mechanical Type



Faraday Electro-Mechanical Gong
From 6 to 18 inches diameter

Every Factory, School or College Building, Public Institution, Hotel, Theatre, Apartment-House, Department Store, Office Building, or Warehouse should be protected against fire by the installation of a FARADAY ELECTRICALLY-SUPERVISED FIRE ALARM SYSTEM.

FARADAY ELECTRICALLY-SUPERVISED FIRE ALARM APPARATUS is the STANDARD for interior fire alarm installations.

No user of fire alarm apparatus is ever satisfied with competitive systems after a careful examination of the FARADAY LINES.

The absolute reliability of FARADAY CONTROL-CABINETS, FARADAY GONGS and FARADAY BOXES, as well as the simplicity of installation-detail, are a guarantee of positive operation at all times.

In a FARADAY FIRE ALARM SYSTEM, the slightest derangement of box-circuits or gong-circuits, or the failure of operative current, is automatically indicated by ringing of Trouble-Bell.

WE GUARANTEE FARADAY FIRE ALARM APPARATUS AGAINST MECHANICAL AND ELECTRICAL DEFECTS FOR A PERIOD OF TWO YEARS FROM DATE OF SALE, AND, FURTHER, IN CONTRACT-FORM GUARANTEE ITS ACCEPTANCE BY STATE OR CITY AUTHORITIES, WHEN INSTALLATION OF SAME IS MADE IN ACCORDANCE WITH RULES OF THE DEPARTMENTS HAVING JURISDICTION.

Engineering advice free if you'll specify that contractor shall use Faraday Fire Alarm Apparatus.
Send for Bulletin 36—it will give you valuable information on interior fire alarm systems of latest approved types.

Northern Electric Company
LIMITED

Sole Distributors for the Dominion of Canada
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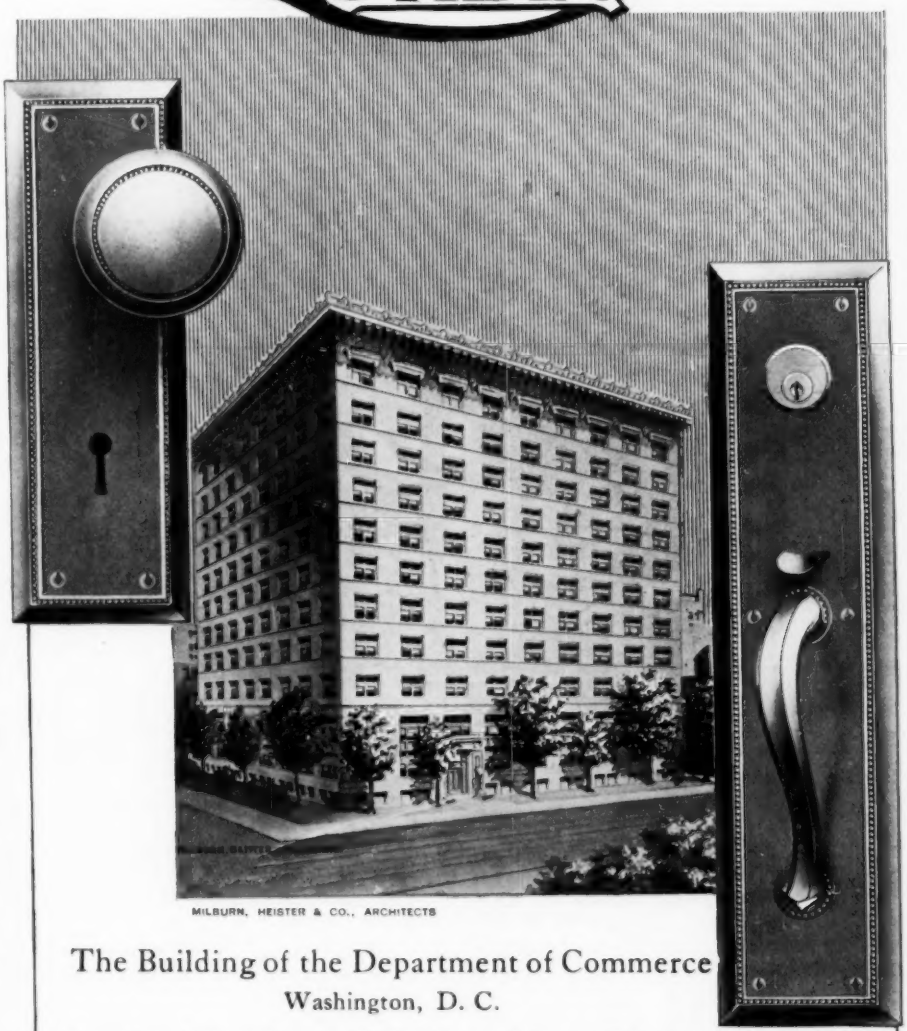
"SWEET'S," 1915—Pages 1460 to 1467—"SWEET'S," 1915

CORBIN



MILBURN, HEISTER & CO., ARCHITECTS

The Building of the Department of Commerce
Washington, D. C.

is equipped throughout with Corbin hardware. This is one of the new Government buildings, strictly modern in all its appointments, and with materials chosen for their excellence. The selection of Corbin hardware was most appropriate.

P. & F. CORBIN
The American Hardware Corporation Successor
NEW BRITAIN, CONNECTICUT
Chicago New York Philadelphia

SARGENT

Hardware

Nothing in the appointments of a building can give it so much distinction as correctly chosen hardware. To be correct it must be in accord with the architectural motive and the scheme of interior decoration to produce an harmonious whole.

Sargent Hardware offers a selection that covers every period of design. It gracefully merges into and becomes a component part of the entire architectural scheme. For apartment houses, hotels, theatres and public buildings—for city residences, small cottages or country homes, the most fitting appointments will be found in the Sargent line.

Back of the beauty of design—under the richness of finish—Sargent Hardware possesses the qualities of material and workmanship that insure permanence.

SARGENT & COMPANY

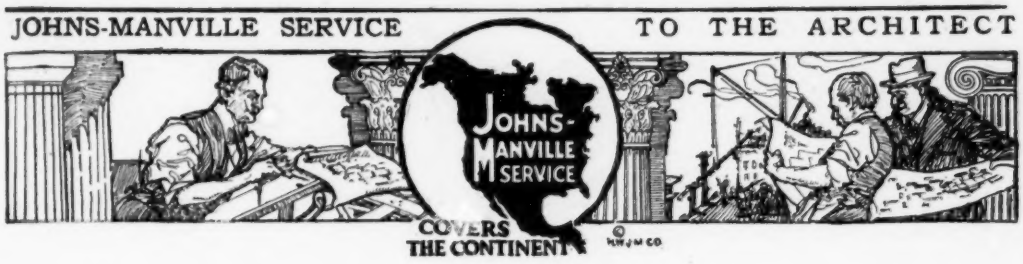
38 Water St., New Haven, Conn.

The Cremorne Bolt
for Casement or French windows, half round bolt, all lengths with guides, oval knob or lever handle, in art bronze, finished to correspond with other metal work.

The Sargent Book of Designs
showing a large number of the most artistic patterns will be sent free on request.

The Colonial Book
illustrating patterns of that period, will be included if you desire it.

JOHNS-MANVILLE SERVICE TO THE ARCHITECT



J-M Responsibility means not only the acknowledgement of obligation but the ability to discharge it

J-M Responsibility underlies all J-M Service. J-M Products are more than articles of sale. They are articles of *permanent use value;* J-M Service sees that this value is wholly realized to the full satisfaction of both the architect who specifies a J-M Product and the client who pays for it.

Facts Point to the J-M Sectional Conduit System as the most efficient and economical

There are several considerations that must be given due thought in every underground steam line. (1) Efficiency—the ratio of the steam you send through the line to that which is received at the other end. (2) Cost—meaning total cost; that is, first cost, repairs, inspection and maintenance. (3) Durability—How long it will last, or "how soon must this system be renewed?" (4) Depreciation—which means the money you must earn, and save, to pay for the renewal of the installation when the present one is gone.

J-M Sectional Conduit is the logical choice under all these considerations. Efficiency—90% and up. Cost—lowest yet. Life—endless. Depreciation—negligible. Tests that prove this are yours for the asking. Tell us where to send them.

ONE FIRM ONE SERVICE ONE RESPONSIBILITY

H. W. JOHNS-MANVILLE COMPANY

Akron	Boston	Columbus	Duluth	Kansas City	Minneapolis	Philadelphia	St. Paul	Toledo
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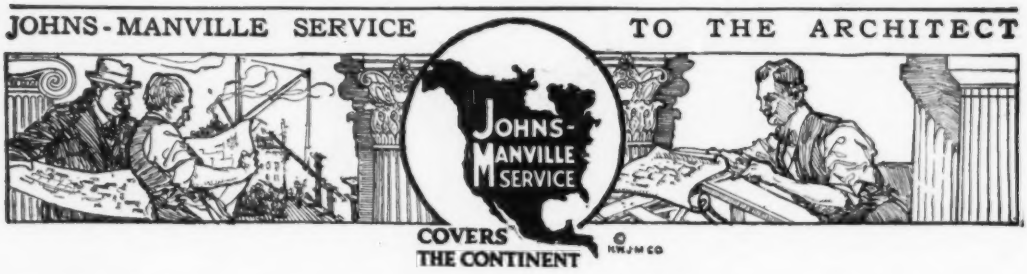
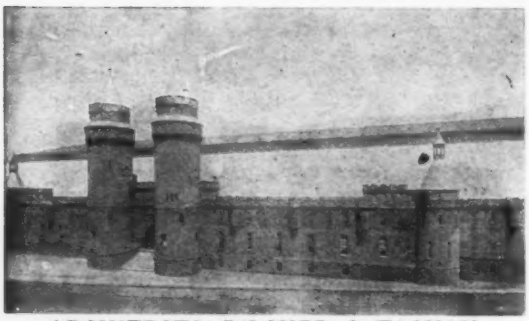
Baltimore	Cincinnati	Denver	Houston	Memphis	New York	Rochester	Seattle	Youngstown
Birmingham	Cleveland	Detroit	Indianapolis	Milwaukee	Omaha	St. Louis	Syracuse	3187

THE CANADIAN H. W. JOHNS-MANVILLE CO., LTD., Toronto, Winnipeg, Montreal, Vancouver

JOHNS-MANVILLE SERVICE TO THE ARCHITECT



J-M Asbestos Roofings have been selected to cover the largest armory in the world



ARCHITECTS, PILCHER & TACHAU

The roof arches of the huge new armory of the Eighth New York Coast Artillery, now well under way, have the greatest span of any arches in the world. Only one roof ever exceeded the span of this—a World's Fair building, since destroyed. This armory building occupies 600 x 375 feet. Its cost, complete, will be $1,000,000.

Architects and State authorities selected J-M Asbestos Roofings to roof this important structure, for their water-proof, fire-resisting and time-defying properties.

J-M Asbestos Ready Roofings cover the arch, and the same material in the form of J-M Asbestos Built-Up Roofing covers the turrets and battalion office building.

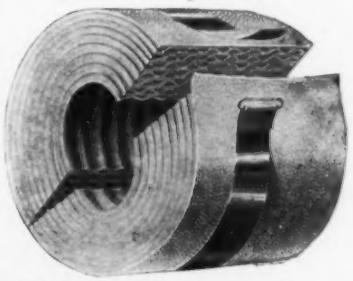
These roofs afford perfect weather shelter, practical fire protection and permanence. They will never need coating or painting or any other attention.

Their long life and efficient service are assured to the fullest extent by J-M Responsibility.

Tell your clients that J-M Insulation Service acts in their interest—you know that it acts in yours

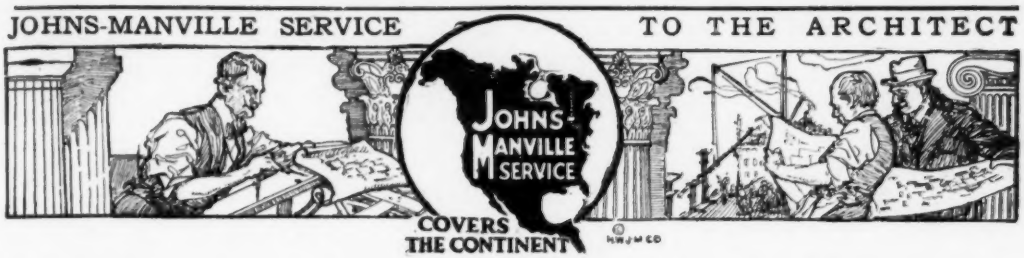
Make them realize that pipe covering and insulation are as different as wallpapering and decoration. That insulation means comfort to house holder and economy in all departments of heating.

And as your protection for these arguments let Johns-Manville Insulation Service perform the work. There are as many J-M Insulations as there are needs and one Service is responsible for all of them in your protection.



JOHNS-MANVILLE PRODUCTS

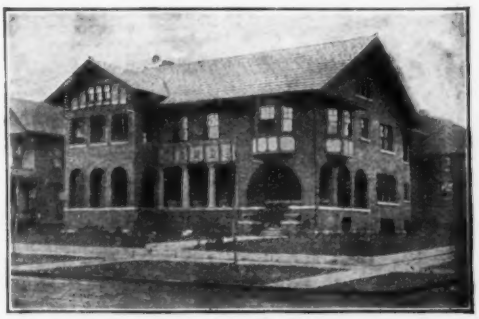
J-M Asbestos Roofing
Asbestoside
Asbestos Roofing and Insulating Felts
J-M Roof Coating
J-M Roof Cement
Keystone Hair Insulator
Sound Deadening Felts
Transite Asbestos Wood Corrugated Roofing
Asbestos Shingles
Cold-Storage Insulation
Asbestos Sheathing
Asbestos Fire and Damp Proof Paper
Asbestos Concrete Coating
Asbestic Wall Plaster
Asbestos Paper and Mill Board
Sanitor Closet Seats
Asbesto-Sponge Felted Covering and Sheets
Asbestos Fire-Felt Covering Sheets and Blocks



J-M Transite Asbestos Shingles offer a wide variety of artistic roof effects

J-M Transite Asbestos Shingles are practically the only thoroughly fireproof shingle with which you are offered a wide latitude in roof treatment.

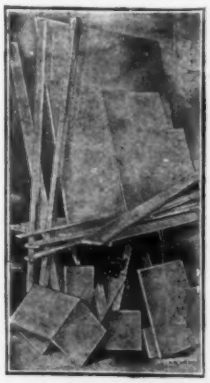
They may be laid according to the hexagonal or "honeycomb" method; the American Method; or diagonally. They come in three shapes—rectangular, square and square—with clipped—corners. All three shapes are furnished in several sizes.



Residence of Mr. Pash Warner, Clinton, Ill. Covered with J-M Transite Asbestos Shingles Frank A. Carpenter, Architect, Rockford, Ill.

Two thicknesses, 1/8 and 1/4 inch. The 1/4 inch shingles have rough edges. The rich colors of these shingles alone — gray, Indian red and mottled brown—recommend them to the architect for artistic effect.

Every demand of weather, fire protection, with almost everlasting permanence is met by this combination of Asbestos and Portland Cement. Ask us for complete information.



The phrase that best describes J-M Transite Asbestos Wood is "fire barrier"

On knowing all the properties of this material, new uses will automatically suggest themselves.

It is a lumber, made up of asbestos and binding cements, so compounded that it can be handled like natural wood, with wood working tools.

Being fibrous in structure it is able to withstand lateral and longitudinal strains and can be nailed or screwed fast to studding like wood itself.

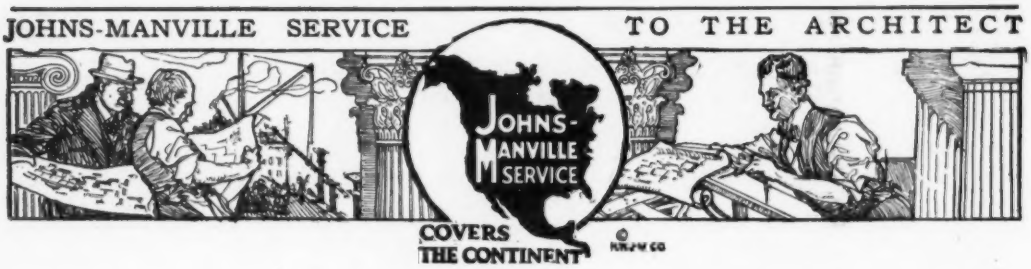
It is resistant to fire and water. Actually improves with age, becoming tougher, and of course it is not subject, as wood is, to rot or disintegration.

Made in two types—for interior and exterior use. Let us send literature on this widely applicable product.

JOHNS-MANVILLE PRODUCTS

J-M 85 per cent. Magnesia Covering
Magnesia Cement and Blocks
Asbestos Molded Covering and Blocks
Vitribestos Materials
Asbestos Air Cell Covering and Sheets
Zero Covering
Anti-Sweat Covering
Asbesto-Sponge Cement Felting
Asbestos Sheet and Roll Fire-Felt
Asbesto-Sponge Hair Felt
J-M Sectional Conduit
Asbesto-Sponge Conduit Filling
Noark Enclosed Fuse Devices
J-M Friction Tape
Molded Weatherproof Sockets
Frink and Linolite Systems
General Lighting Service
Manville Fire Extinguisher
Success Fire Extinguisher

JOHNS-MANVILLE SERVICE TO THE ARCHITECT



Lighting Units that express art—without sacrificing utility

You will immediately recognize in the illustration a beautiful example of the Louis XVI period, just as you would identify its original on the walls of the Petit Trianon, Versailles. It is one of the many beautiful productions that have individualized the Mitchell Vance Company as a designer of lighting material.

While the original and its replica are to the minutest detail exact duplicates, there is a vast difference in their lighting value. The reproduction is an efficient lighting fixture—and it has been made so without departing in the slightest from the lines of the original.

The inference we want to draw for the architect is this—that Johns-Manville Lighting Service is available for the interpretation of artistic work. For the expression of the architect's ideas on art—in fixtures of metal.

This service combines the experience, equipment and art of the Mitchell Vance Company with the display and special illuminants of the Frink & J-M Linolite Systems of Lighting, which two factors unite with the Johns-Manville Lighting Department as a single service.

This service has been recognized by the representative architects all over the country who have indicated their confidence in us by entrusting such work to our craftsmanship.

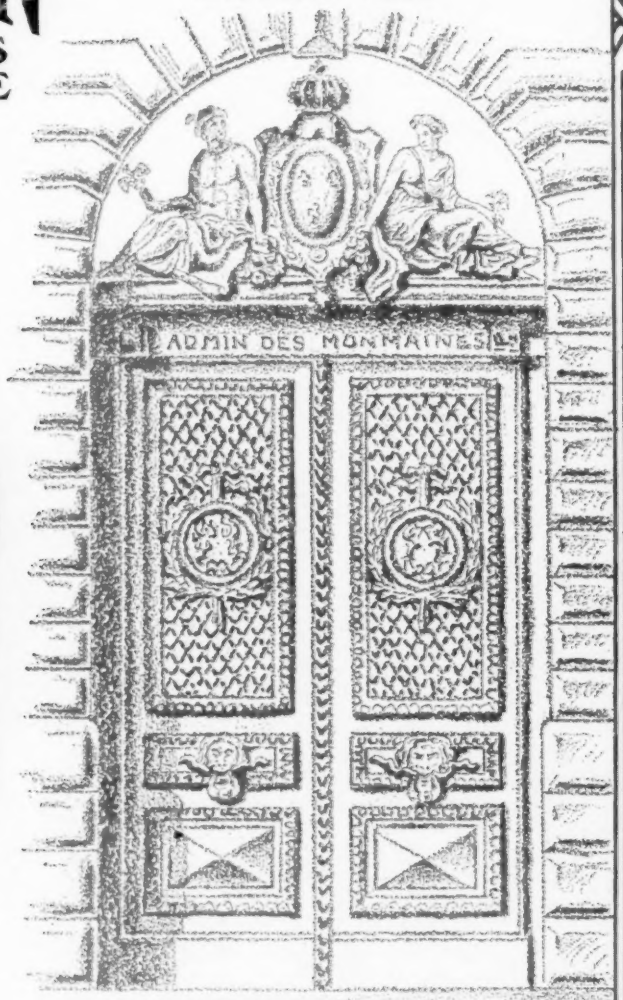
H. W. JOHNS-MANVILLE COMPANY

Akron	Boston	Columbus	Duluth	Kansas City	Minneapolis	Philadelphia	St. Paul	Toledo
Albany	Buffalo	Dallas	Galveston	Los Angeles	Newark	Pittsburgh	Salt Lake City	Washington
Atlanta	Chicago	Dayton	Houghton	Louisville	New Orleans	Portland	San Francisco	Wilkes-Barre
Baltimore	Cincinnati	Denver	Houston	Memphis	New York	Rochester	Seattle	Youngstown
Birmingham	Cleveland	Detroit	Indianapolis	Milwaukee	Omaha	St. Louis	Syracuse	

The Canadian H. W. Johns-Manville Co., Ltd., Toronto, Winnipeg, Montreal, Vancouver

RUSSWIN
BUILDERS HARDWARE

LOUIS XVI



MAIN ENTRANCE-HOTEL DES MONNAIES
PARIS 1778

RUSSELL & ERWIN MFG. CO.,

The American Hardware Corp. Successor

SAN FRANCISCO — NEW BRITAIN, - CONN. — LONDON, ENG.

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73 East Lake St.

"Target and Arrow" Roofing Tin

FIRST CHURCH OF CHRIST SCIENTIST, SEATTLE, WASHINGTON.
Charles H. Bebb and L. L. Mendel, Architects, Seattle, Washington. (Partnership dissolved in 1913.)
Seattle Cornice Works, Seattle, Washington, roofers.

ANOTHER fine example of modern church architecture from the Pacific Coast. Roofed with "TARGET AND ARROW" roofing tin, laid over wood strips or battens to secure a ribbed effect. Repeated selection of this brand of tin for use on monumental buildings of this kind is good evidence of the high reputation this old-time, hand-made product enjoys, based on nearly a century's service.

"TARGET AND ARROW" is a specialty of ours handed down from the early days of our business. In this brand we have preserved an old-time standard of manufacture for the use and benefit of present-day architects. Few buildings have had so thorough a test of time as "TARGET AND ARROW" roofing tin. It remains today the same durable quality of roofing tin that we have supplied to American sheet-metal workers for nearly two-thirds of a century. It costs a little more than other roofing tin, so you are not likely to get Taylor quality if you write a specification that permits substitution. In your sheet metal specifications where roofing tin is required, simply call for Taylor's "TARGET AND ARROW" roofing tin, to be laid in accordance with the standard working specifications of the National Association of Sheet Metal Contractors. With a responsible roofing contractor, such a specification will secure you tin roofing work of the standard that has made the old-time roofing tin a by-word for durability and all-around satisfaction in service. We furnish upon request copies of this standard tin roofing specification form, also some instructive literature, telling about this old product. Our catalog is in "Sweet's," pages 492-493 of the 1915 and 520-522 of the 1914 and and 546-549 of the 1913 edition.

Facsimile of trade-mark stamped on each sheet. The brand formerly known as Taylor's Old Style.

N. & G. TAYLOR CO., of Philadelphia
Headquarters for Good Roofing Tin Since 1810

Alba is the lighting equipment which, subdued or ample, is always soft and gentle and develops the imaginative and suggestive lines of a fine interior.

Architect's portfolio of Alba Lighting Equipment on request.

Macbeth-Evans Glass Co
Pittsburgh

Sales and Showrooms also in New York, Chicago
Philadelphia, St Louis, Boston, Cincinnati
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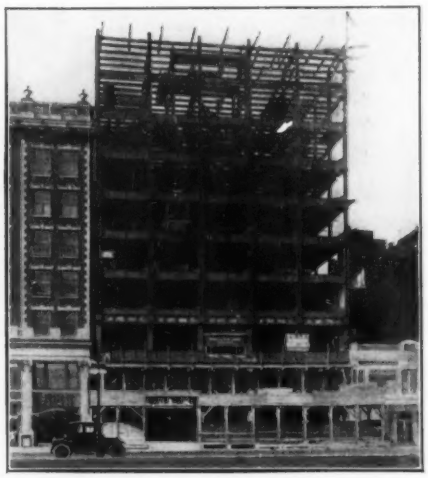
Reg. U. S.
Pat. Off.

AMERICAN BRIDGE COMPANY

HUDSON TERMINAL-30 CHURCH STREET, NEW YORK

Manufacturers of Steel Structures of all classes particularly BRIDGES AND BUILDINGS



Barnheisel Building
Chicago, Ill.

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Cleveland, Ohio . . . . . Rockefeller Building	Portland, Ore. . . . . Selling Building
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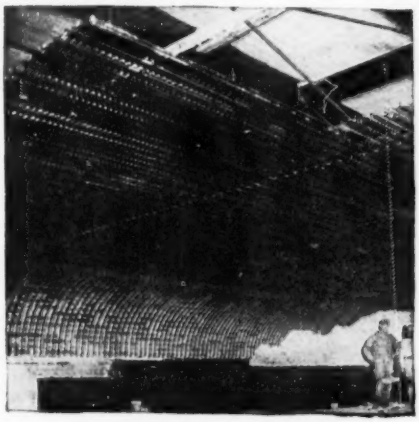
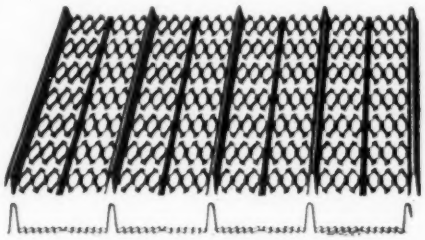
Export Representative: United States Steel Products Co., 30 Church St., N. Y.



CORR-MESH CEILING
Marloca Theatre, Buffalo, N. Y.
CORR-MESH sheets form a stiff reinforcement for the plaster. Note the curved sheets near the wall. These are formed in our shops ready to erect at the job.



CORR-MESH

Stiff-ribbed, one-piece expanded metal. The ribs are ¾ inch high, and spaced 3¼ inches apart, giving great strength to the reinforcement and doing away with extra studding. The metal between the ribs is expanded into a diamond mesh.

Easily and quickly put up and plastered. Ideal for walls and roofs of industrial buildings, whether constructed with steel, reinforced concrete or wooden frames.

Send for CORR-MESH Booklet

CORR-MESH

For Concrete Walls, Floors and Roofs of Factory Buildings, also for Ceilings, Partitions and Exterior Walls of Stucco Residences.

A Plus Value

Plain steel costs just so much per ton.

But change it into a product which makes reinforced construction easier, cheaper, and better, and you get a plus value.

The amount of this plus value depends upon the inventive and engineering skill put into the development of the product.

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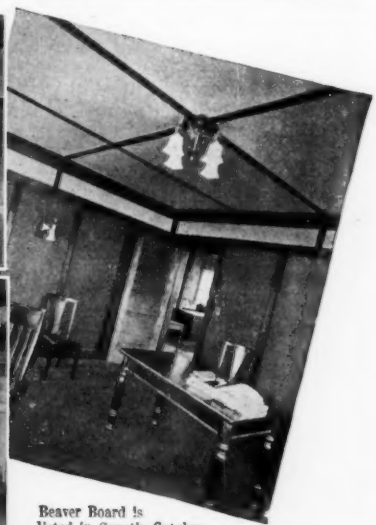

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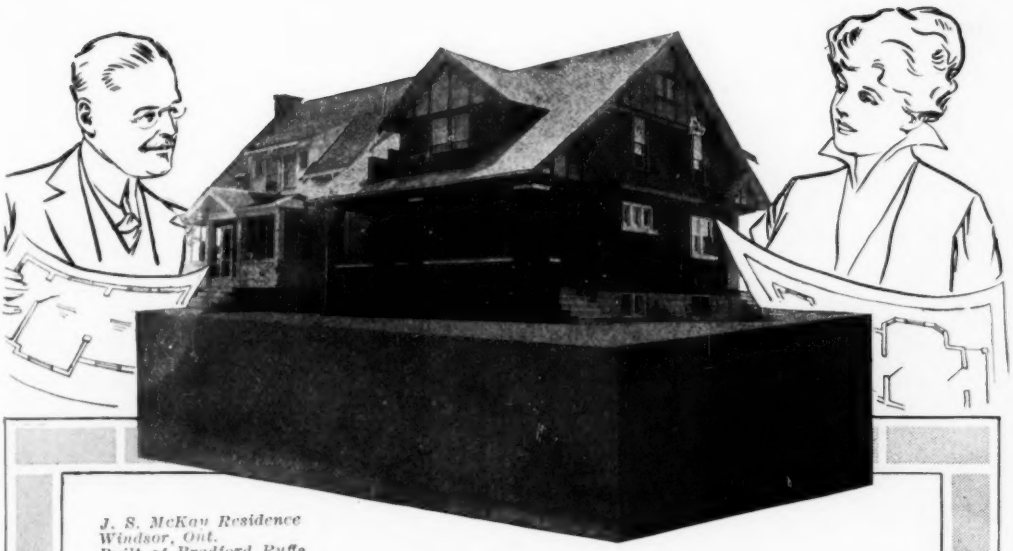

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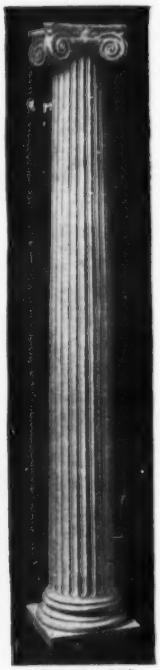

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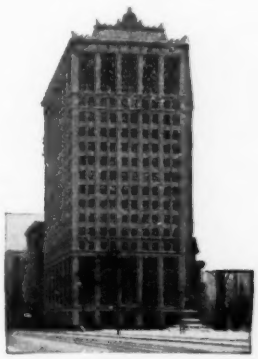

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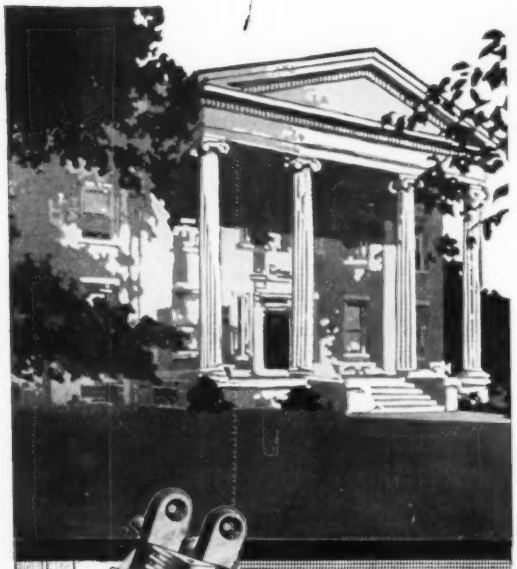

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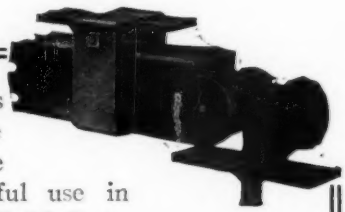

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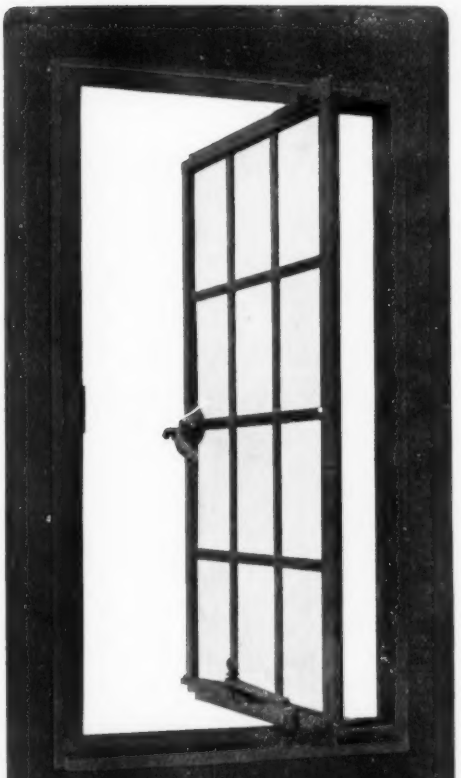

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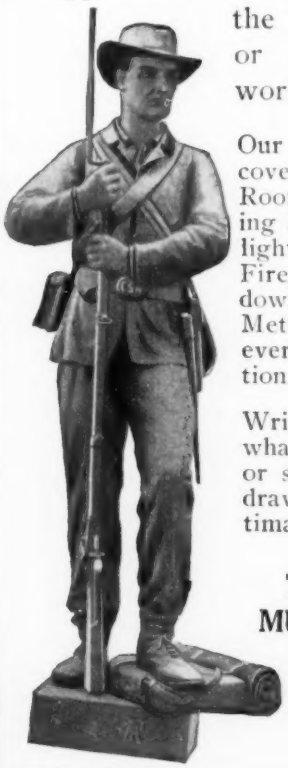

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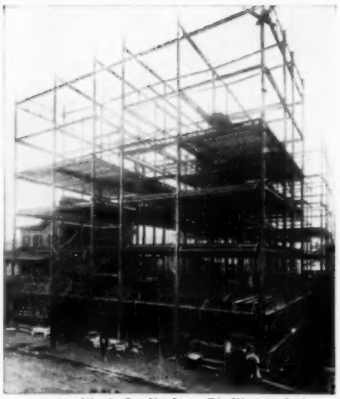

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All Floors, Partitions Suspended Ceilings, Roof, etc., are Berger's Metal Lumber. Even the Door and Window Frames are Metal, and the Floors are finished with Cement.

Berger's Metal Lumber System

PROVEN

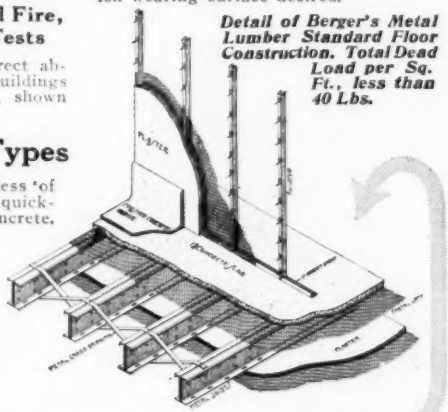
Absolutely Fire Proof

by Official Practical Fire, Load and Water Tests

Makes it possible to erect absolutely fire proof buildings like Way's Sanitarium, shown here.

I-joists spaced 16 inches center to center with No. 25 gauge Expanded Metal Lath on top and bottom flanges. Joists are diagonally bridged with 1-inch No. 20 galvanized steel bridging. On top of joists 2x2-inch nailing blocks are placed and securely nailed into web. Space between nailing blocks filled with 1-3-6 concrete on top of lath without forms.

This is Standard Construction and may be finished with concrete (as shown in the drawing), tile or any finish wearing surface desired.



Detail of Berger's Metal Lumber Standard Floor Construction. Total Dead Load per Sq. Ft., less than 40 Lbs.

For Buildings of All Kinds and Types

Berger Metal Lumber Buildings can be put up regardless of weather conditions, are sound and damp proof, built more quickly than wood and more economically than reinforced concrete. **All chance of construction failure eliminated.**

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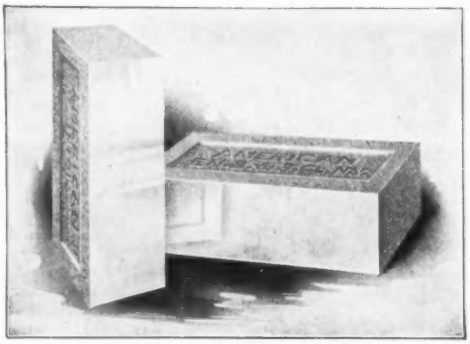

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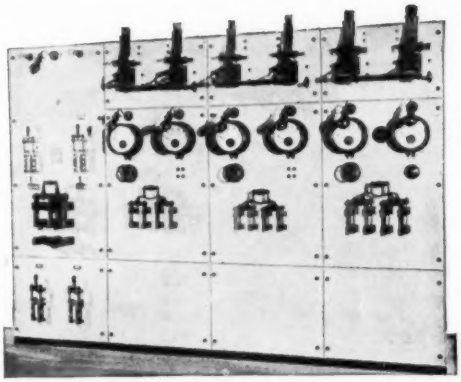
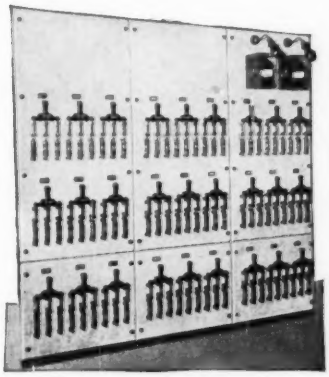
A Typical Office-Building Switchboard



GENERATOR SECTION.



FEEDER SECTION.

Built for Maryland Casualty Co. Bldg., Baltimore, Md.

The neat arrangement of the copper on rear of this switchboard is a good example of Westinghouse practice.

All generator copper runs to terminals at bottom of the panels, all feeder copper runs to terminals at top of panels, so that it is not necessary to run cables over the back of the board. The method in which copper is braced to the frame work makes a very rigid construction.

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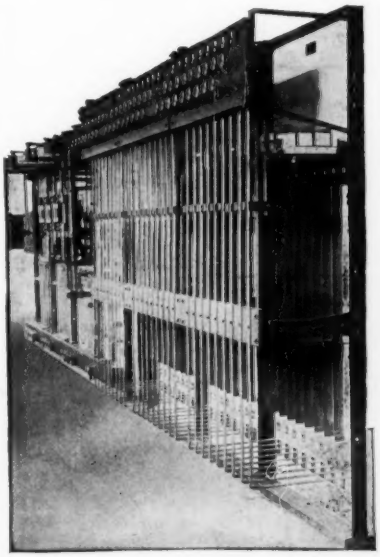
An emergency central-station power-circuit connection is provided for, in case of a break-down of the power plant.



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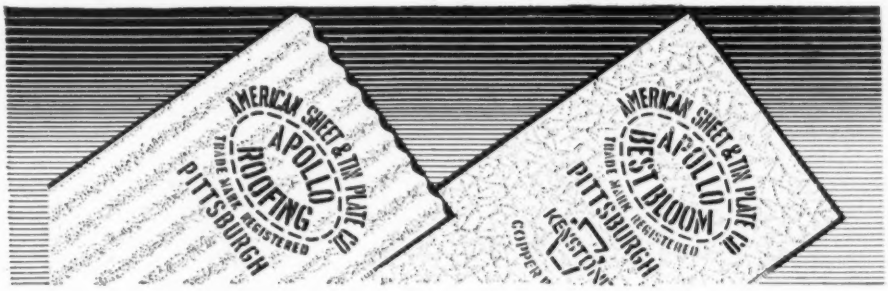

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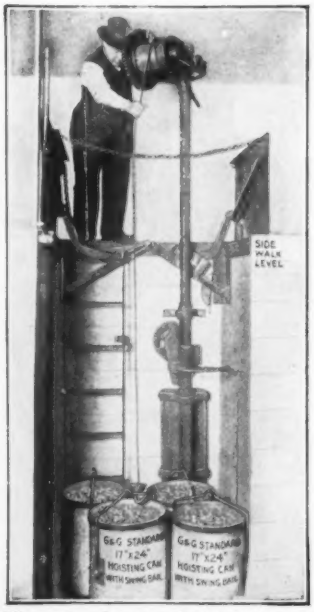

Illustration also shows the G & G Sidewalk Door Opening and Closing Device which automatically opens and closes doors as hoisting head is raised or telescoped.

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THE G & G Telescopic Hoist is so designed that it is practical for one man unaided to perform the entire operation of raising ash cans to sidewalk and lowering empty cans to cellar.

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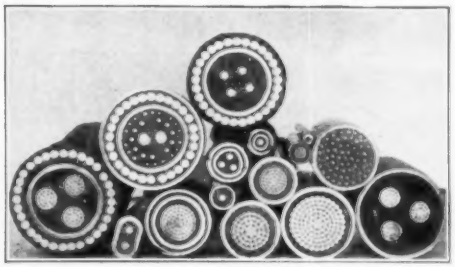

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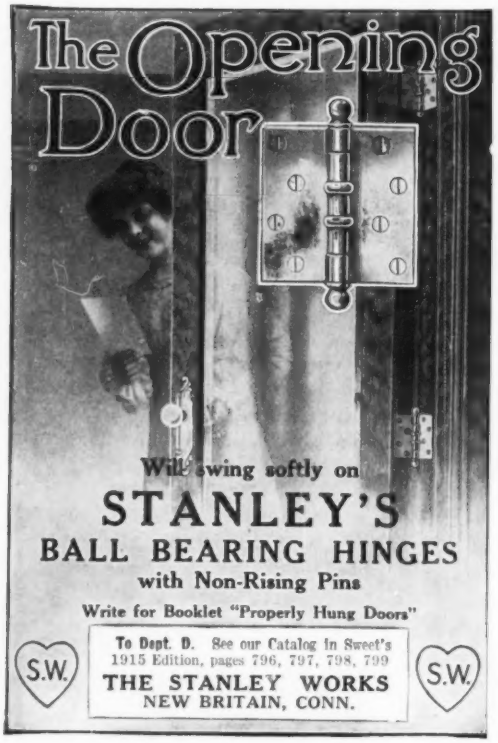

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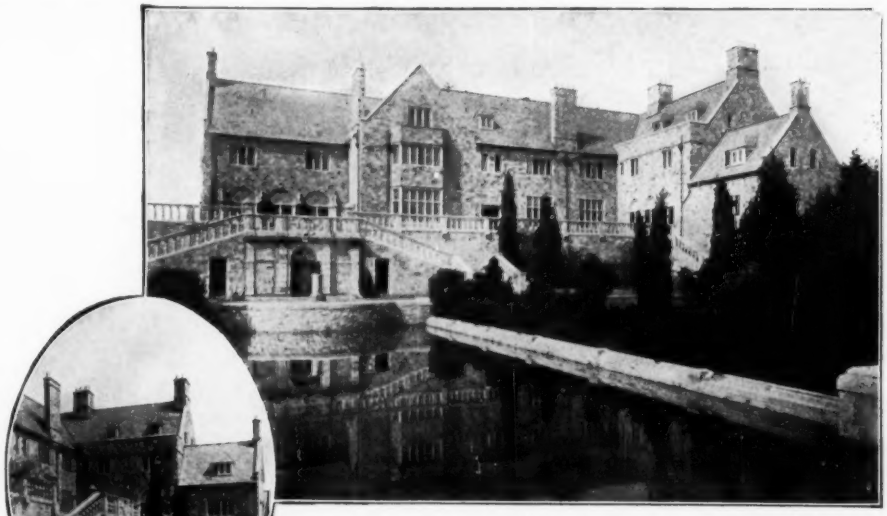

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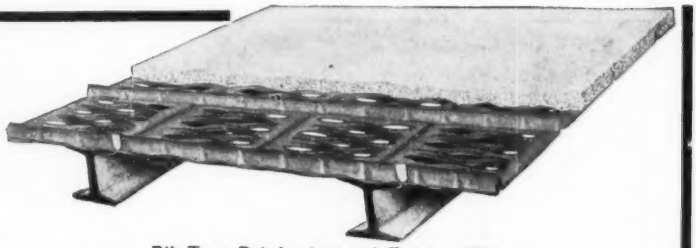

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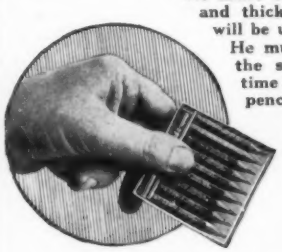

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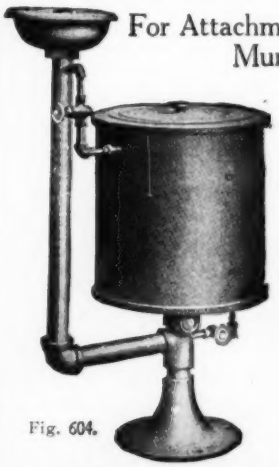

Fig. 604.

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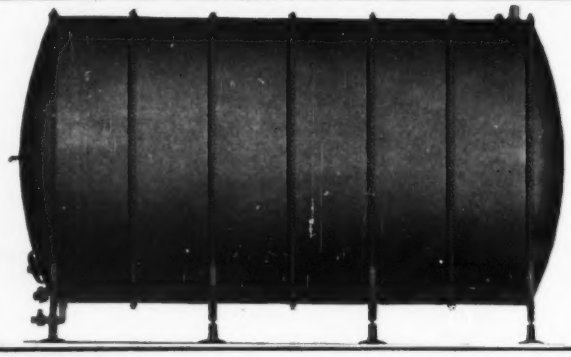

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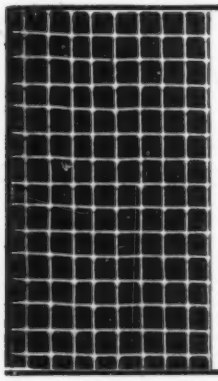

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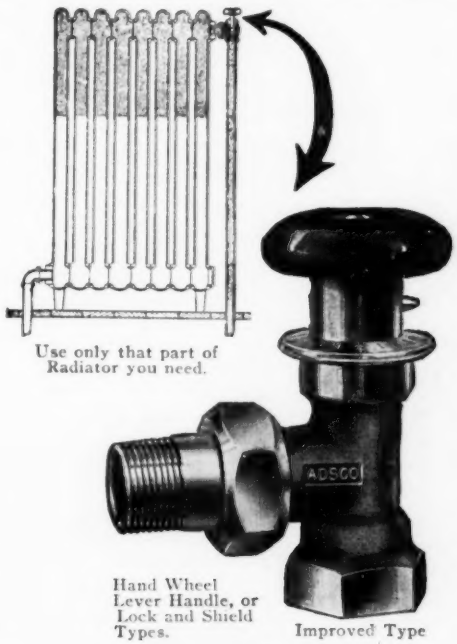

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THIS CODE, together with such provisions of the Tenement House Act, of the Factory, Labor, and other State laws, of special city ordinances, and of regulations of State and City departments as affect the construction or alteration of buildings, is now being compiled into a book entitled the "Building Laws of Greater New York," to be published shortly by the Record and Guide Co., New York.

A SPECIAL FEATURE of this book will be a comprehensive classified single index to all of its varied contents coupled with cross references in the text.

THE COMPILER and editor is Rudolph P. Miller, former Superintendent of Buildings of Manhattan, and expert to the Building Committee of the Board of Aldermen in the revision of the Building Code.

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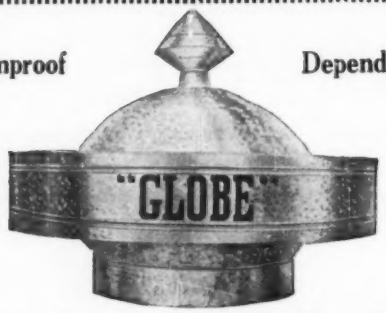

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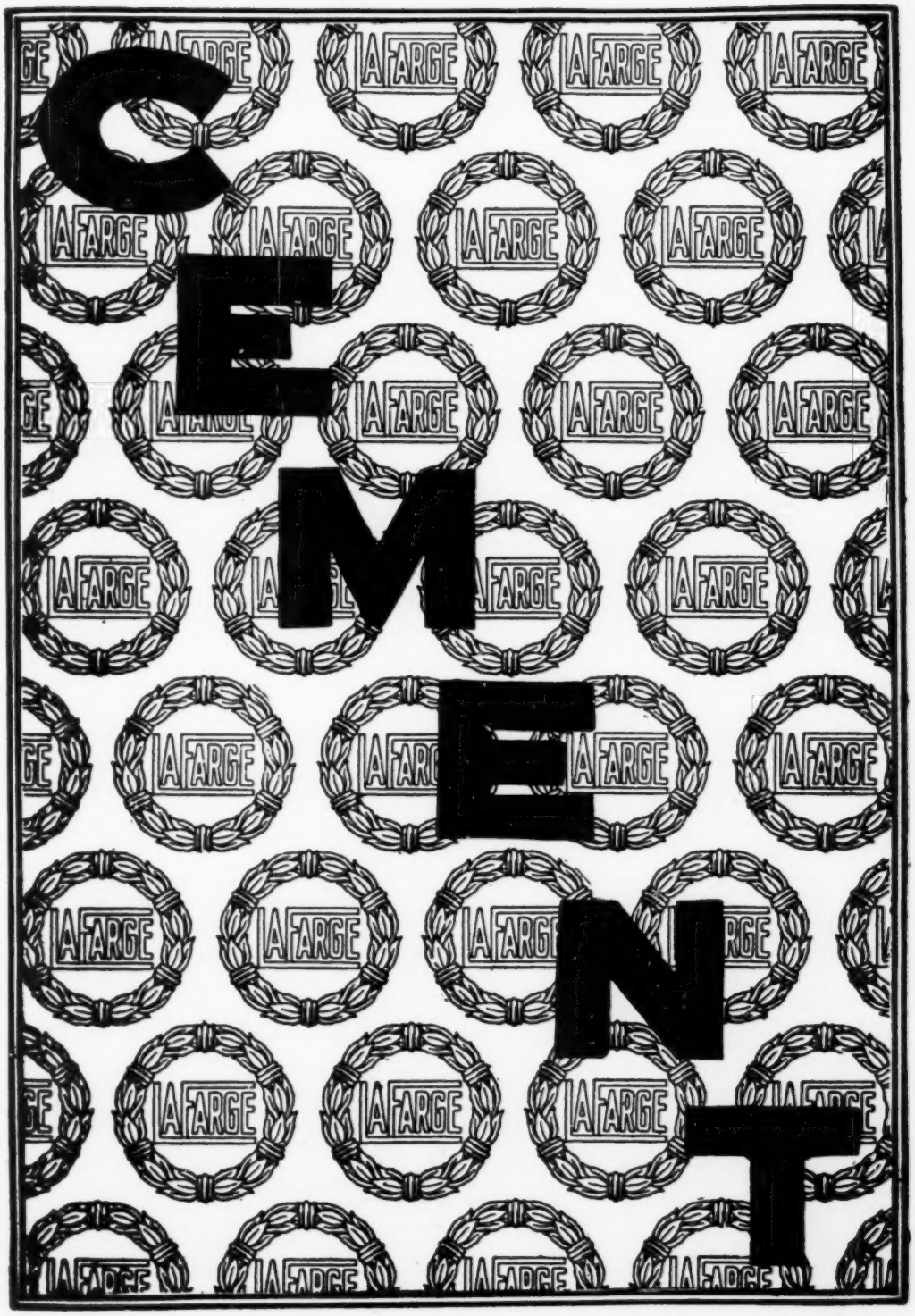
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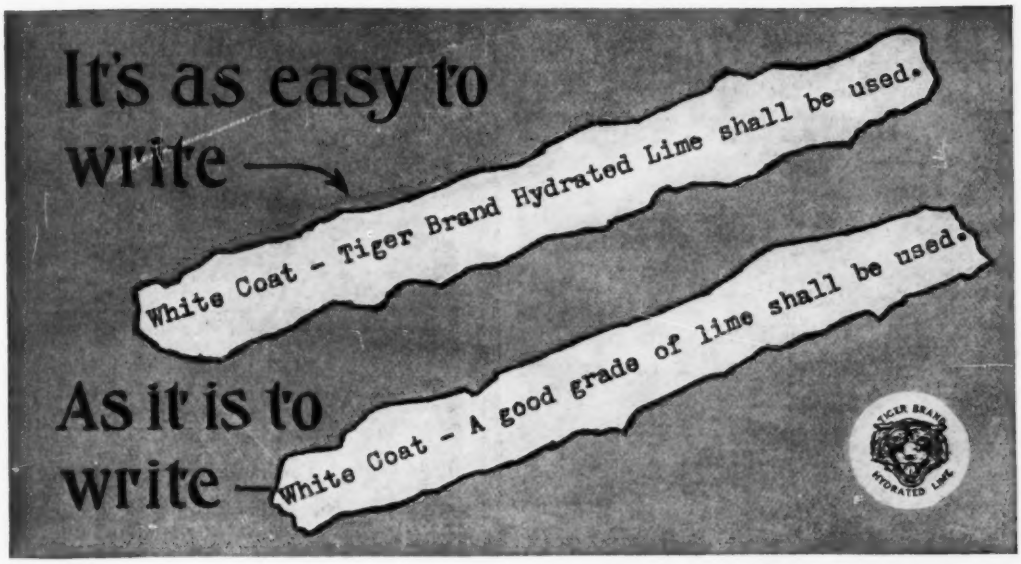
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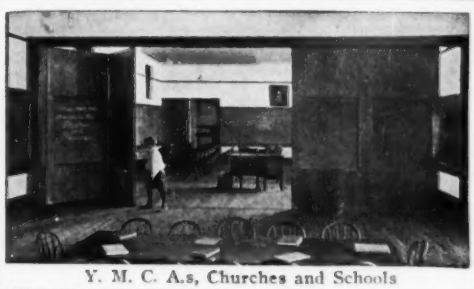

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THE following are the figures shown in our report to the Audit Bureau of Circulations for the first quarter of 1915. Complete copies of this report, giving full details, will gladly be furnished to anyone interested.

Important Facts

Average Paid Mail Subscribers - -	7327
Average News Stand Sales - - -	1850
Average Total Paid Circulation - -	9177
Average Total Circulation - - - -	11250

The Percentage of Professional Circulation of our Paid Subscription List—Issue of March, 1915—is 79½%

The Architectural Record

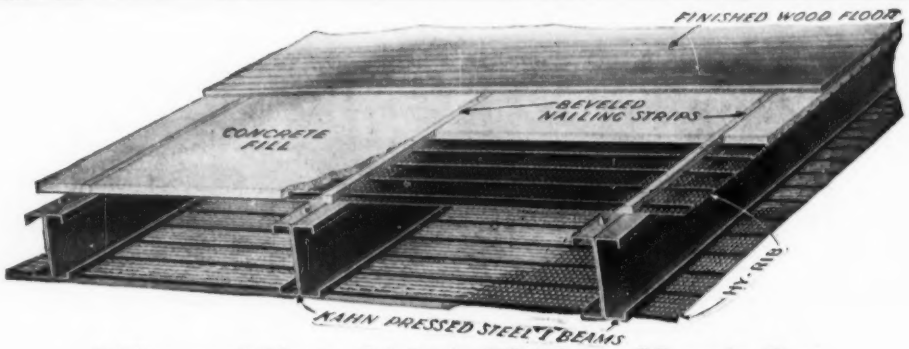
and March, 1915

Distribution of Paid Circulation

Issue of March, 1915

	Mail Subscribers	News Stands
Maine	34	
New Hampshire	21	
Vermont	15	
Massachusetts	415	155
Rhode Island	53	13
Connecticut	124	24
New England States	662	192
New York	1381	931
New Jersey	284	35
Pennsylvania	636	164
Delaware	19	
Maryland	107	29
District of Columbia	99	35
No. Atlantic States	2526	1194
Virginia	78	
North Carolina	50	
South Carolina	33	
Georgia	68	15
Florida	48	
So. Eastern States	277	15
Kentucky	48	5
West Virginia	49	
Tennessee	69	
Alabama	46	
Mississippi	12	
Louisiana	71	20
Texas	147	1
Oklahoma	32	
Arkansas	20	
So. Western States	494	26

	Mail Subscribers	News Stands
Ohio	336	101
Indiana	150	15
Illinois	570	145
Michigan	232	27
Wisconsin	141	45
Minnesota	150	49
Iowa	106	12
Missouri	211	73
North Dakota	15	
South Dakota	12	
Nebraska	35	30
Kansas	41	
Middle States	1999	497
Montana	27	
Wyoming	10	
Colorado	43	8
New Mexico	9	
Arizona	18	
Utah	32	3
Nevada	2	
Idaho	12	
Washington	90	28
Oregon	63	11
California	563	454
Western States	869	504
Total United States	6827	2428
Canada	165	72
U. S. Possessions	30	
Foreign	259	
Grand Total	7281	2500



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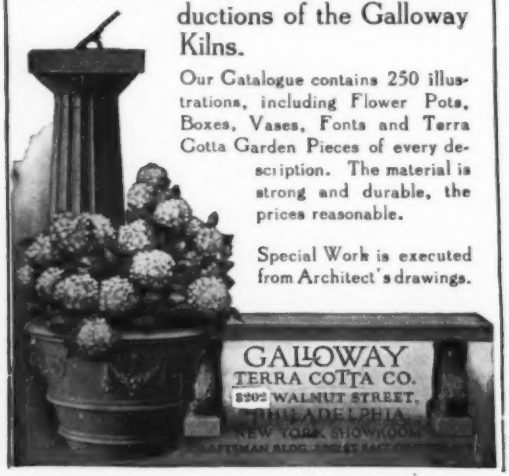

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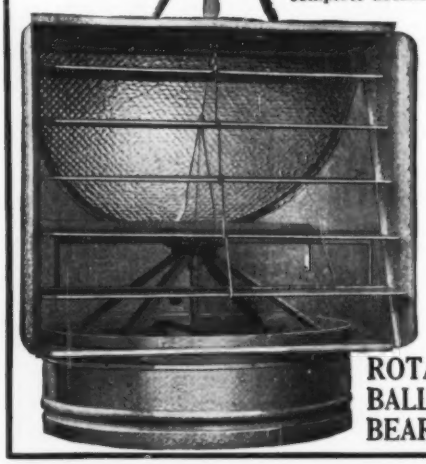

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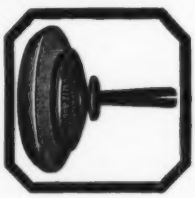

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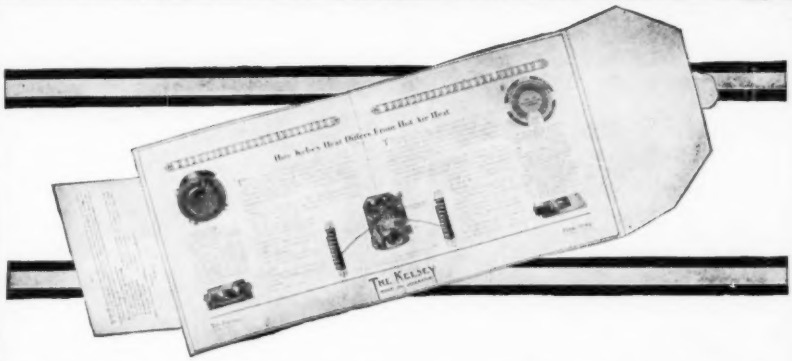

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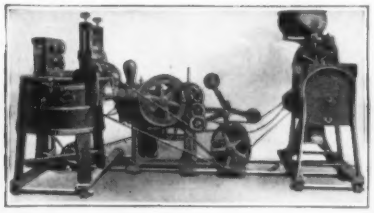

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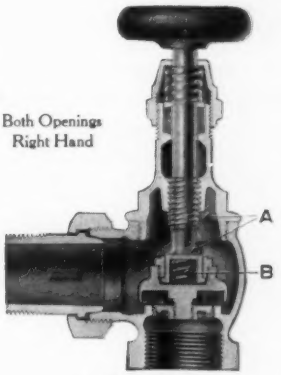

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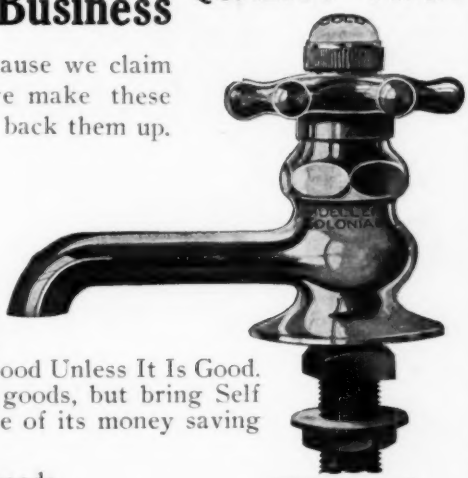

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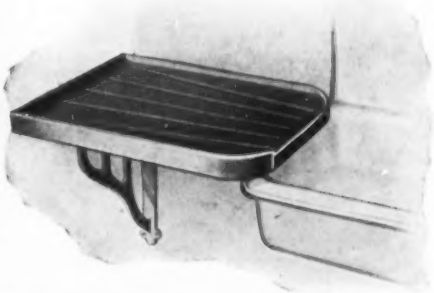

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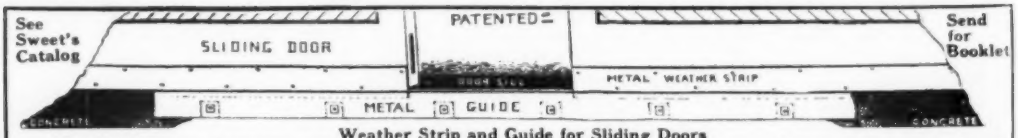

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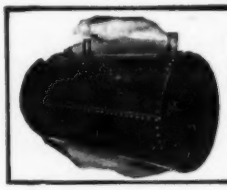

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Hotel Keepers, Merchants, Manufacturers and other business men have found Daylight not merely an eye comfort but a downright daily business necessity. They find that they can do more work and better work with the aid of Daylight, and that is why Architects everywhere are providing LUXFER in the buildings.

Luxfer System of Daylighting

is **scientifically accurate.** Its service is predetermined, and that is why its installation is a guarantee of Daylight.

In justice to yourself, to your clients and to your buildings, we ask you not merely to specify but to **insist** upon LUXFER Installations, since there are no "just as good" substitutes which can replace LUXFER.

LUXFER Daylights dark basements, stores, warehouses, factories, shops, museums, libraries, residences and every other place where Daylight is an advantage.

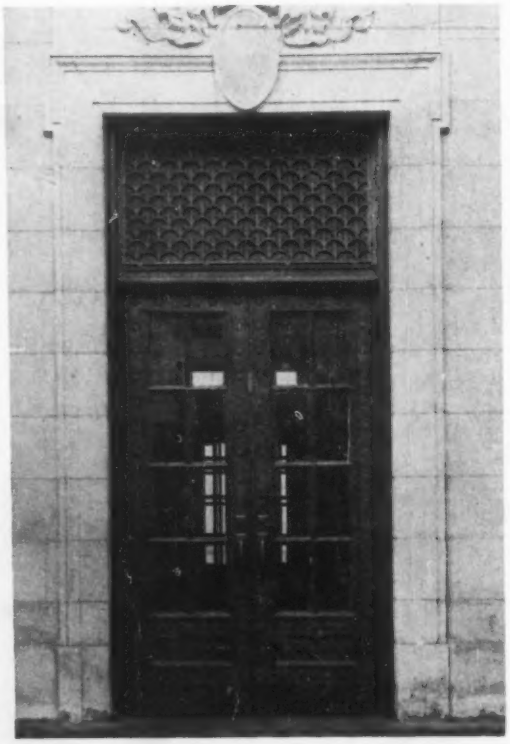
The Architect is LUXFER'S best friend because LUXFER is his best friend —never giving him any cause for excuses when installing it. Its definite, lasting and scientific service stand by the Architect and his specifications.

Let our Daylighting Experts help you in all your Daylighting problems—they will be glad to do so on your request.

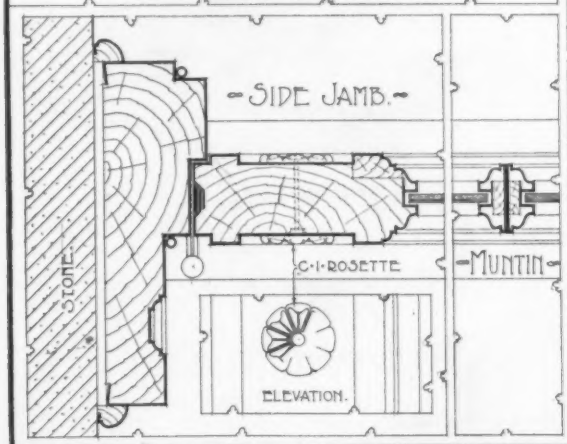
AMERICAN Luxfer Prism COMPANY

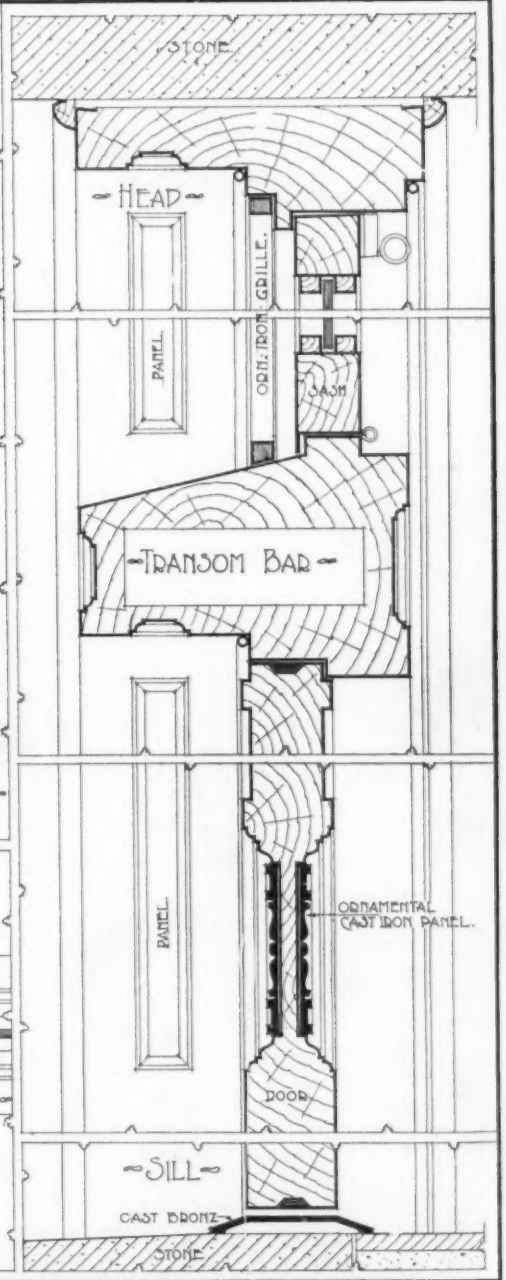
Chicago, Heyworth Building
Boston, 49 Federal Street
Cleveland, 419-20 Citizens' Bldg.
Detroit, Builders' Exchange
Duluth, 310 West Michigan St.
Kansas City, 909 N. Y. Life Bldg.
Milwaukee, Stroh Building
New York, 507 West Broadway
New Orleans, 904 Hennen Bldg.
Philadelphia, 411 Walnut Street
Rochester, 38 Exchange Street
Dallas, Builders' Exchange
San Francisco, 445-47 Turk St.
Los Angeles, 1835 S. Main Street
St. Paul, 365 University Ave.

THORP ENTRANCES



MAIN ENTRANCE TO GATEWAY PARK BLDG MINNEAPOLIS
HEWITT & BROWN ARCHITECTS





THORP FIREPROOF DOOR COMPANY
MINNEAPOLIS MINNESOTA